MODEL G8144Z/G8145Z/G8146Z
VARIABLE SPEED
VERTICAL METAL CUTTING
BANDSAW
OWNER'S MANUAL

#TS10085 PRINTED IN TAIWAN

⚠ WARNING!

This manual provides critical safety instructions on the proper setup, operation, maintenance and service of this machine/equipment.

Failure to read, understand and follow the instructions given in this manual may result in serious personal injury, including amputation, electrocution or death.

The owner of this machine/equipment is solely responsible for its safe use. This responsibility includes but is not limited to proper installation in a safe environment, personnel training and usage authorization, proper inspection and maintenance, manual availability and comprehension, application of safety devices, blade/cutter integrity, and the usage of personal protective equipment.

The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.

⚠ WARNING!

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- **Lead from lead-based paints.**
- **Crystalline silica from bricks, cement and other masonry products.**
- **Arsenic and chromium from chemically-treated lumber.**

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: Work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

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INTRODUCTION

Foreword

We are proud to offer the Model G8144Z/G8145Z/G8146Z Variable Speed Vertical Metal Cutting Bandsaw. This machine is part of a growing Grizzly family of fine metalworking machinery. When used according to the guidelines set forth in this manual, you can expect years of trouble-free, enjoyable operation and proof of Grizzly's commitment to customer satisfaction.

The specifications, drawings, and photographs illustrated in this manual represent the Model G8144Z/G8145Z/G8146Z when the manual was prepared. However, owing to Grizzly's policy of continuous improvement, changes may be made at any time with no obligation on the part of Grizzly.

For your convenience, we always keep current Grizzly manuals available on our website at **www.grizzly.com**. Any updates to your machine will be reflected in these manuals as soon as they are complete. Visit our site often to check for the latest updates to this manual!

Contact Info

If you have any comments regarding this manual, please write to us at the address below:

Grizzly Industrial, Inc.
C/O Technical Documentation Manager
P.O. Box 2069
Bellingham, WA 98227-2069
Email: manuals@grizzly.com

We stand behind our machines. If you have any service questions or parts requests, please call or write us at the location listed below.

Grizzly Industrial, Inc.
1203 Lycoming Mall Circle
Muncy, PA 17756
Phone: (570) 546-9663
Fax: (800) 438-5901
E-Mail: techsupport@grizzly.com
Web Site: http://www.grizzly.com

MACHINE DATA SHEET

Customer Service #: (570) 546-9663 • To Order Call: (800) 523-4777 • Fax #: (800) 438-5901

MODEL G8144Z
12" VARIABLE SPEED
VERTICAL METAL CUTTING BANDSAW

Product Dimensions:

Weight	495 lbs.
Length/Width/Height	33 7/16" x 21 1/4" x 59 7/16"
Foot Print (Length/Width)	28 5/16" x 15"

Shipping Dimensions:

Type	Wood & Cardboard
Content	Machine
Weight	566 lbs.
Length/Width/Height	33" x 24" x 68"

Electrical:

Switch	ON/OFF Push Button
Switch Voltage	220V
Cord Length	6½ ft.
Cord Gauge	14 gauge
Required Power Source	220V, Single-Phase
Recommended Circuit Size	15A
Included Plug	No

Motors:

Bandsaw

Type	TEFC Capacitor Start Induction
Horsepower	1 HP
Voltage	220V
Phase	3-Phase
Amps	3.3A
Speed	1725 RPM
Cycle	60 Hz
Number Of Speeds	1
Power Transfer	Belt Drive
Bearings	Shielded and Permanently Sealed

Grinder

Type	TEFC Capacitor Start Induction
Horsepower	1/8 HP
Voltage	220V
Phase	Single-Phase
Amps	0.6A
Speed	3450 RPM
Cycle	60 Hz
Number Of Speeds	1
Power Transfer	Direct Drive
Bearings	Sealed and Lubricated

Main Specifications:

Operation Information

Number of Blade Speeds	Variable
Blade Speed Range	104–1300 FPM
Blade Size Range	⅛"–⅜"
Blade Length Range	94¼"–98¼"

Cutting Capacity

Maximum Cutting Height	5⅛"
Cutting Capacity Left of Blade	12 3/16"

Table Information

Table Tilt	15° Left, 45° Right
Table Size (Length/Width/Thickness)	22⅛" x 18⅛" x 1⅝"
Floor to Cutting Surface of Table	34⅝"

Construction

Table	Precision Ground Cast Iron
Wheels	Fully-Balance Cast Iron
Tires	Rubber
Blade Guides	Tungsten Steel
Body	Cast Iron
Base	Pre-Formed Steel
Wheel Covers	Pre-Formed Steel
Paint	Powder Coated

Other Related Infomation

Wheel Diameter	12"
Electric Blade Welder	220V, 1.2KVA
Annealing Voltage	220V
Mobile Base	G7314

Other Specifications:

Country Of Origin	Taiwan
Warranty	1 Year
Serial Number Location	ID Label on Upper Wheel Cover
Assembly Time	60 minutes

Features:

Station for Joining Blade Ends, Includes Cut-Off Blades, Electric Welder w/ Clamp, Annealer, and Grinder
Variable Cutting Speeds w/ Digital Read-Out
Lower Wheel Cleaning Brush
Work Light

MACHINE DATA SHEET

Customer Service #: (570) 546-9663 • To Order Call: (800) 523-4777 • Fax #: (800) 438-5901

MODEL G8145Z
14" VARIABLE SPEED
VERTICAL METAL CUTTING BANDSAW

Product Dimensions:

Weight	660 lbs.
Length/Width/Height	37" x 15⅛" x 62⅝"
Foot Print (Length/Width)	28" x 16½"

Shipping Dimensions:

Type	Wood & Cardboard
Content	Machine
Weight	744 lbs.
Length/Width/Height	33" x 24" x 76"

Electrical:

Switch	ON/OFF Push Button
Switch Voltage	220V
Cord Length	6½ ft.
Cord Gauge	14 gauge
Required Power Source	220V, Single-Phase
Recommended Circuit Size	15A
Included Plug	No

Motors:

Bandsaw

Type	TEFC Capacitor Start Induction
Horsepower	1½ HP
Voltage	220V
Phase	3-Phase
Amps	5.1A
Speed	1725 RPM
Cycle	60 Hz
Number Of Speeds	1
Power Transfer	Belt Drive
Bearings	Shielded and Permanently Sealed

Grinder

Type	TEFC Capacitor Start Induction
Horsepower	⅛ HP
Voltage	220V
Phase	Single-Phase
Amps	0.6A
Speed	3450 RPM
Cycle	60 Hz
Number Of Speeds	1
Power Transfer	Direct Drive
Bearings	Sealed and Lubricated

Main Specifications:

Operation Information

Number of Blade Speeds	Variable
Blade Speed Range	108–1800 FPM
Blade Size Range	⅛"–½"
Blade Length Range	105"–110"

Cutting Capacity

Maximum Cutting Height	7½"
Cutting Capacity Left of Blade	14 3/16"

Table Information

Table Tilt	15° Left, 45° Right
Table Size (Length/Width/Thickness)	21 5/16" x 19¾" x 2"
Floor to Cutting Surface of Table	35"

Construction

Table	Precision Ground Cast Iron
Wheels	Fully-Balanced Cast Iron
Tires	Rubber
Blade Guides	Tungsten Steel
Body	Cast Iron
Base	Pre-Formed Steel
Wheel Covers	Pre-Formed Steel
Paint	Powder Coated

Other Related Infomation

Wheel Diameter	14"
Electric Blade Welder	220V, 2.0KVA
Annealing Voltage	220V
Mobile Base	G7314

Other Specifications:

Country Of Origin	Taiwan
Warranty	1 Year
Serial Number Location	ID Label on Upper Wheel Cover
Assembly Time	60 minutes

Features:

Station for Joining Blade Ends, Includes Cut-Off Blades, Electric Welder w/ Clamp, Annealer, and Grinder
Variable Cutting Speeds w/ Digital Read-Out
Lower Wheel Cleaning Brush
Work Light

MACHINE DATA SHEET

Customer Service #: (570) 546-9663 • To Order Call: (800) 523-4777 • Fax #: (800) 438-5901

MODEL G8146Z
16" VARIABLE SPEED
VERTICAL METAL CUTTING BANDSAW

Product Dimensions:

Weight	914 lbs.
Length/Width/Height	36⅜" x 19⅛" x 71⅞"
Foot Print (Length/Width)	40⅛" x 27⁹⁄₁₆"

Shipping Dimensions:

Type	Wood & Cardboard
Content	Machine
Weight	1020 lbs.
Length/Width/Height	41¾" x 31½" x 79¾"

Electrical:

Switch	ON/OFF Push Button w/ Safety Lockout Key
Switch Voltage	220V
Cord Length	6½ ft.
Cord Gauge	14 gauge
Required Power Source	220V, Single-Phase
Recommended Circuit Size	15A
Included Plug	No

Motors:

Bandsaw

Type	TEFC Capacitor Start Induction
Horsepower	2 HP
Voltage	220V
Phase	3-Phase
Amps	6.6A
Speed	1725 RPM
Cycle	60 Hz
Number Of Speeds	1
Power Transfer	Belt Drive
Bearings	Shielded and Permanently Sealed

Grinder

Type	TEFC Capacitor Start Induction
Horsepower	⅛ HP
Voltage	220V
Phase	Single-Phase
Amps	0.6A
Speed	3450 RPM
Cycle	60 Hz
Number Of Speeds	1
Power Transfer	Direct Drive
Bearings	Sealed and Lubricated

Main Specifications:

Operation Information

Number of Blade Speeds	Variable
Blade Speed Range	105–2100 FPM
Blade Size Range	⅛"–¾"
Blade Length Range	133"–136"

Cutting Capacity

Maximum Cutting Height	10¼"
Cutting Capacity Left of Blade	15¾"

Table Information

Table Tilt	15° Left, 45° Right
Table Size (Length/Width/Thickness)	23⅝" x 21$^{11}/_{16}$" x 2"
Floor to Cutting Surface of Table	38"

Construction

Table	Precision Ground Cast Iron
Wheels	Fully-Balanced Cast Iron
Tires	Rubber
Blade Guides	Tungsten Steel
Body	Cast Iron
Base	Pre-Formed Steel
Wheel Covers	Pre-Formed Steel
Paint	Powder Coated

Other Related Infomation

Wheel Diameter	16"
Electric Blade Welder	220V, 4.2KVA
Annealing Voltage	220V
Mobile Base	G7314

Other Specifications:

Country Of Origin	Taiwan
Warranty	1 Year
Serial Number Location	ID Label on Upper Wheel Cover
Assembly Time	60 minutes

Features:

Station for Joining Blade Ends, Includes Cut-Off Blades, Electric Welder w/ Clamp, Annealer, and Grinder
Variable Cutting Speeds w/ Digital Read-Out
Lower Wheel Cleaning Brush
Work Light

Model G8144Z/G8145Z Basic Identification

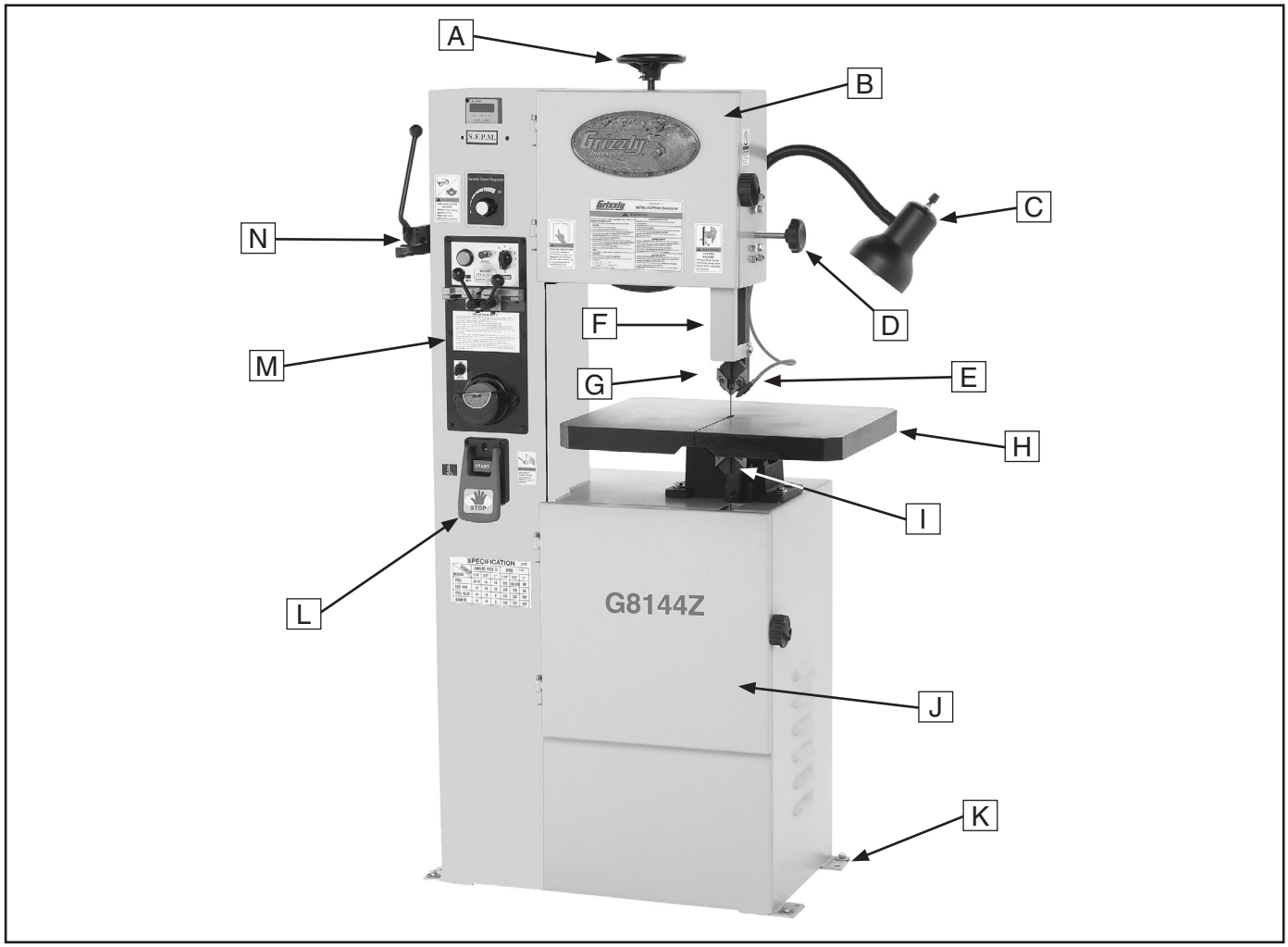


Figure 1. Model G8144Z/G8145Z basic identification.

A. Blade Tensioning Handwheel
B. Upper Wheel Door
C. Work Light (220V)
D. Blade Post Lock Knob
E. Air Hose & Jet
F. Blade Guard
G. Upper Blade Guide Assembly
H. Table
I. Lower Blade Guide Assembly
J. Lower Wheel Door
K. Machine Mounting Flange
L. Bandsaw Start/Stop Switch
M. Blade Welding Station
N. Blade Shear

Model G8146Z Basic Identification

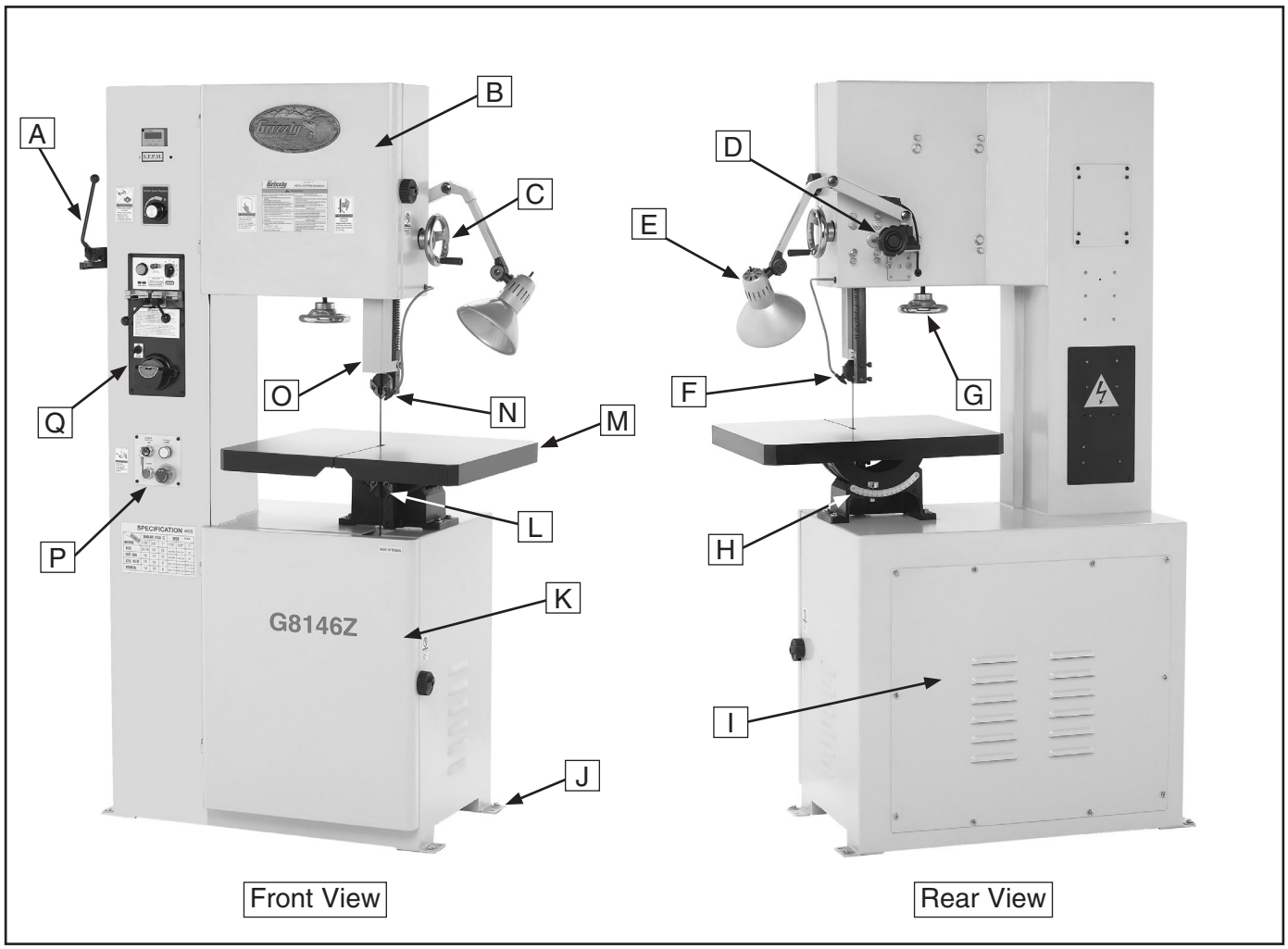


Figure 2. Model G8146Z basic identification.

A. Blade Shear
B. Upper Wheel Door
C. Guide Post Elevation Handwheel
D. Guide Post Lock Knob
E. Work Light (220V)
F. Air Hose & Jet
G. Blade Tension Handwheel
H. Table Tilt Scale
I. Motor Access Panel
J. Machine Mounting Flange
K. Lower Wheel Door
L. Lower Blade Guide Assembly
M. Table
N. Upper Blade Guide Assembly
O. Blade Post
P. Bandsaw Power Control Panel
Q. Blade Welding Station

Control Panel Identification

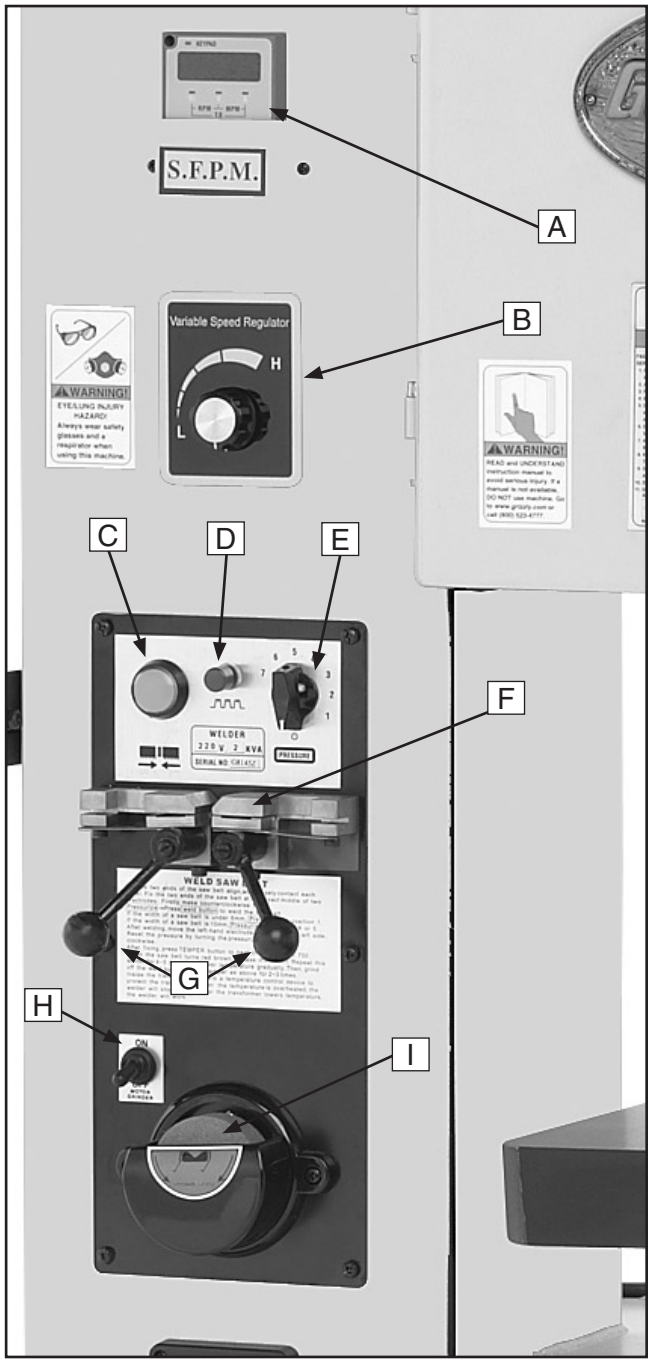


Figure 3. Control panel identification.

A. Digital Speed Display (FPM)
B. Variable Speed Control
C. Welding ON Button
D. Annealing ON Button
E. Clamping Pressure Dial
F. Welder Jaws
G. Welding Jaw Lock Levers
H. Grinding Wheel ON/OFF Switch
I. Grinding Wheel

Figure 4. Model G8144Z/G8145Z power switch.

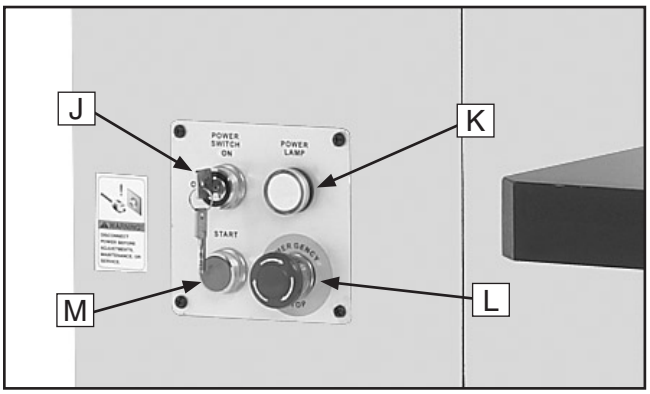


Figure 5. Model G8146Z power control panel.

Model G8146Z only:

J. Power Switch & Key
K. Power Lamp
L. Emergency Stop Button
M. Bandsaw Start Button

SECTION 1: SAFETY

⚠WARNING

For Your Own Safety, Read Instruction Manual Before Operating this Machine

The purpose of safety symbols is to attract your attention to possible hazardous conditions. This manual uses a series of symbols and signal words intended to convey the level of importance of the safety messages. The progression of symbols is described below. Remember that safety messages by themselves do not eliminate danger and are not a substitute for proper accident prevention measures.

⚠DANGER **Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.**

⚠WARNING **Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.**

⚠CAUTION **Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury. It may also be used to alert against unsafe practices.**

NOTICE **This symbol is used to alert the user to useful information about proper operation of the machine.**

⚠WARNING

Safety Instructions for Machinery

1. **READ THE ENTIRE MANUAL BEFORE STARTING MACHINERY.** Machinery presents serious injury hazards to untrained users.
2. **ALWAYS USE ANSI APPROVED SAFETY GLASSES WHEN OPERATING MACHINERY.** Everyday eyeglasses only have impact resistant lenses—they are NOT safety glasses.
3. **ALWAYS WEAR A NIOSH APPROVED RESPIRATOR WHEN OPERATING MACHINERY THAT PRODUCES DUST.** Most types of dust (wood, metal, etc.) can cause severe respiratory illnesses.
4. **ALWAYS USE HEARING PROTECTION WHEN OPERATING MACHINERY.** Machinery noise can cause permanent hearing loss.
5. **WEAR PROPER APPAREL.** DO NOT wear loose clothing, gloves, neckties, rings, or jewelry that can catch in moving parts. Wear protective hair covering to contain long hair and wear non-slip footwear.
6. **NEVER OPERATE MACHINERY WHEN TIRED OR UNDER THE INFLUENCE OF DRUGS OR ALCOHOL.** Be mentally alert at all times when running machinery.

⚠WARNING
Safety Instructions for Machinery

7. **ONLY ALLOW TRAINED AND PROPERLY SUPERVISED PERSONNEL TO OPERATE MACHINERY.** Make sure operation instructions are safe and clearly understood.

8. **KEEP CHILDREN AND VISITORS AWAY.** Keep all children and visitors a safe distance from the work area.

9. **MAKE WORKSHOP CHILDPROOF.** Use padlocks, master switches, and remove start switch keys.

10. **NEVER LEAVE WHEN MACHINE IS RUNNING.** Turn power ***OFF*** and allow all moving parts to come to a complete stop before leaving machine unattended.

11. **DO NOT USE IN DANGEROUS ENVIRONMENTS.** DO NOT use machinery in damp, wet locations, or where any flammable or noxious fumes may exist.

12. **KEEP WORK AREA CLEAN AND WELL LIGHTED.** Clutter and dark shadows may cause accidents.

13. **USE A GROUNDED EXTENSION CORD RATED FOR THE MACHINE AMPERAGE.** Grounded cords minimize shock hazards. Undersized cords create excessive heat. Always replace damaged extension cords.

14. **ALWAYS DISCONNECT FROM POWER SOURCE BEFORE SERVICING MACHINERY**. Make sure switch is in OFF position before reconnecting.

15. **MAINTAIN MACHINERY WITH CARE.** Keep blades sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.

16. **MAKE SURE GUARDS ARE IN PLACE AND WORK CORRECTLY BEFORE USING MACHINERY.**

17. **REMOVE ADJUSTING KEYS AND WRENCHES.** Make a habit of checking for keys and adjusting wrenches before turning machinery ***ON***.

18. **CHECK FOR DAMAGED PARTS BEFORE USING MACHINERY.** Check for binding or misaligned parts, broken parts, loose bolts, and any other conditions that may impair machine operation. Repair or replace damaged parts before operation.

19. **USE RECOMMENDED ACCESSORIES.** Refer to the instruction manual for recommended accessories. Improper accessories increase risk of injury.

20. **DO NOT FORCE MACHINERY.** Work at the speed for which the machine or accessory was designed.

21. **SECURE WORKPIECE.** Use clamps or a vise to hold the workpiece when practical. A secured workpiece protects your hands and frees both hands to operate the machine.

22. **DO NOT OVERREACH.** Maintain stability and balance at all times.

23. **MANY MACHINES CAN EJECT WORKPIECES TOWARD OPERATOR.** Know and avoid conditions that cause the workpiece to "kickback."

24. **ALWAYS LOCK MOBILE BASES (IF USED) BEFORE OPERATING MACHINERY**.

25. **CERTAIN DUST MAY BE HAZARDOUS** to the respiratory systems of people and animals, especially fine dust. Be aware of the type of dust you are exposed to and always wear a respirator designed to filter that type of dust.

⚠WARNING

Safety Instructions for Metal Cutting Bandsaws

1. **BLADE CONDITION.** Do not operate with dull, cracked or badly worn blade that can break during operation or decrease the performance of the bandsaw. Inspect blades for cracks and missing teeth before each use.

2. **BLADE REPLACEMENT.** Wear gloves to protect hands and safety glasses to protect eyes when replacing the blade. When replacing blades, make sure teeth face forward and down toward the table in the direction of blade travel.

3. **WORKPIECE HANDLING.** Your hands can be drawn into the blade during operation if the workpiece moves unexpectedly. Always keep your hands a safe distance away from the moving blade.

4. **FIRE HAZARD.** Use EXTREME CAUTION if cutting magnesium. Using the wrong cutting fluid will lead to chip fire and possible explosion.

5. **WELDING AND GRINDING SAFETY.** The welding station represents a serious hazard. DO NOT touch any metal parts of the blade, welder, or machine when activating the welder. Keep your hands a safe distance away from the grinding wheel when in use.

6. **HOT SURFACES.** Be aware that touching hot workpieces or chips after welding, grinding, or cutting can cause burns.

7. **CUTTING FLUID SAFETY.** Cutting fluids are poisonous. Always follow manufacturer's cutting-fluid safety instructions. Pay particular attention to contact, contamination, inhalation, storage and disposal warnings. Spilled cutting fluid invites slipping hazards.

8. **ENTANGLEMENT HAZARDS.** Always keep the blade guard correctly positioned and wheel doors closed and secured when bandsaw is in operation. Loose clothing, jewelry, long hair and work gloves can be drawn into working parts.

9. **MAINTENANCE/SERVICE.** All inspections, adjustments, and maintenance are to be done with the power ***OFF*** and the plug pulled from the outlet. Wait for all moving parts to come to a complete stop.

10. **UNSTABLE WORKPIECES.** Workpieces that cannot be supported or stabilized without a vise or jig should not be cut on a vertical metal-cutting bandsaw, because they can unexpectedly move while cutting and draw the operator's hands into the blade causing serious personal injury. Examples are chains, cables, round or oblong-shaped workpieces, workpieces with internal or built-in moving or rotations parts, etc.

11. **EXPERIENCING DIFFICULTY.** If at any time you are experiencing difficulties performing the intended operation, stop using the machine! Contact our Technical Support Department at (570) 546-9663.

⚠CAUTION

No list of safety guidelines can be complete. Every shop environment is different. Always consider safety first, as it applies to your individual working conditions. Use this and other machinery with caution and respect. Failure to do so could result in serious personal injury, damage to equipment, or poor work results.

SECTION 2: CIRCUIT REQUIREMENTS

220V Operation

⚠WARNING

Serious personal injury could occur if you connect the machine to power before completing the setup process. DO NOT connect the machine to the power until instructed later in this manual.

⚠WARNING

Electrocution or fire could result if machine is not grounded and installed in compliance with electrical codes. Compliance MUST be verified by a qualified electrician!

Full Load Amperage Draw

G8144Z Motor Draw at 220V.....5 Amps
G8145Z Motor Draw at 220V.....6 Amps
G8146Z Motor Draw at 220V.....7 Amps

Circuit Requirements

You MUST connect your machine to a grounded circuit that is rated for the amperage given below. Never replace a circuit breaker on an existing circuit with one of higher amperage without consulting a qualified electrician to ensure compliance with wiring codes. **If you are unsure about the wiring codes in your area or you plan to connect your machine to a shared circuit, consult a qualified electrician.**

Minimum 220V Circuit (All Models).....15 Amps

Power Connection Device

The type of plug required to connect your machine to power depends on the type of service you currently have or plan to install. We recommend using the plug shown in **Figure 6**.

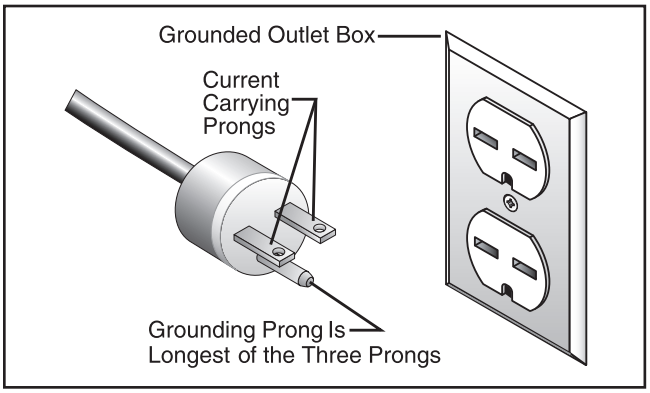


Figure 6. NEMA 6-15 plug and receptacle.

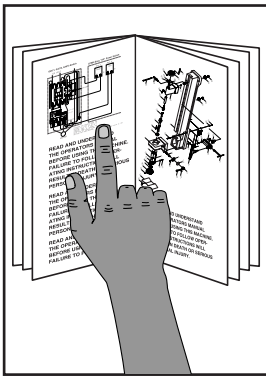
Extension Cords

Using extension cords may reduce the life of the motor. Instead, place the machine near a power source. If you must use an extension cord:

- Use at least a 14 gauge cord that does not exceed 50 feet in length!
- The extension cord must also have a ground wire and plug pin.
- A qualified electrician MUST size cords over 50 feet long to prevent motor damage.

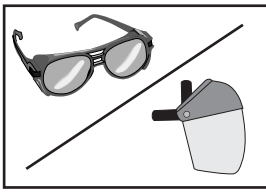
SECTION 3: SETUP

Setup Safety



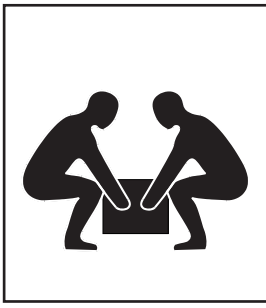
WARNING

This machine presents serious injury hazards to untrained users. Read through this entire manual to become familiar with the controls and operations before starting the machine!



WARNING

Wear safety glasses or a face shield during the entire setup process!



WARNING

This machine and its components are very heavy. Get lifting help and use power lifting equipment such as a forklift to move heavy items.

Items Needed for Setup

The following items are needed to complete the setup process, but are not included with your machine:

Description	Qty
• Assistants	2
• Safety Glasses (for each person)	1
• Lifting Straps (rated for 1000 lbs.)	As Needed
• Forklift (rated for 1000 lbs.)	1
• Floor Mounting Hardware	As Needed

Unpacking

Your machine was carefully packaged for safe transportation. Remove the packaging materials from around your machine and inspect it. If you discover the machine is damaged, *please immediately call Customer Service at (570) 546-9663 for advice.*

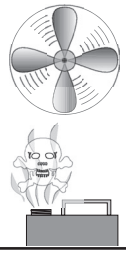
Save the containers and all packing materials for possible inspection by the carrier or its agent. *Otherwise, filing a freight claim can be difficult.*

Clean Up

The unpainted surfaces are coated with a waxy oil to prevent corrosion during shipment. Remove this protective coating with a solvent cleaner or citrus-based degreaser such as Grizzly's G7895 Citrus Degreaser. To clean thoroughly, some parts must be removed. **For optimum performance from your machine, clean all moving parts or sliding contact surfaces.** Avoid chlorine-based solvents, such as acetone or brake parts cleaner that may damage painted surfaces. Always follow the manufacturer's instructions when using any type of cleaning product.

⚠WARNING

Gasoline and petroleum products have low flash points and can explode or cause fire if used to clean machinery. DO NOT use these products to clean the machinery.



⚠CAUTION

Many cleaning solvents are toxic if inhaled. Minimize your risk by only using these products in a well ventilated area.

G2544—Solvent Cleaner & Degreaser
A great product for removing the waxy shipping grease from your machine during clean up.

Figure 7. Cleaner/degreaser available from Grizzly.

Site Considerations

Floor Load

Refer to the **Machine Data Sheet** (starting on **Page 3**) for the weight and footprint specifications of your machine. Some floors may require additional reinforcement to support both the machine and operator.

Placement Location

Consider existing and anticipated needs, size of material to be processed through each machine, and space for auxiliary stands, work tables or other machinery when establishing a location for your new machine. See **Figures 8–9** for the minimum working clearances.

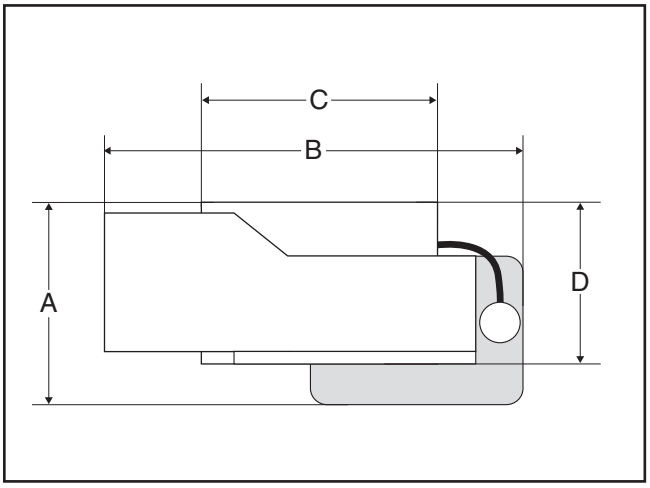


Figure 8. Minimum horizontal working clearances (top view).

	A	B	C	D
G8144Z	21¼"	33 7/16"	15"	28 5/16"
G8145Z	15⅛"	37"	16½"	28"
G8146Z	19⅛"	36⅜"	27 9/16"	40⅛"

Figure 9. Minimum working clearance dimensions.

Mounting to Shop Floor

The bandsaw center of gravity is above the middle of the machine. Although not required, we strongly recommend that you mount your new machine to the floor to prevent tipping. Because this is an optional step and floor materials may vary, floor mounting hardware is not included.

Bolting to Concrete Floors

Anchor studs and lag bolts (**Figure 10**) are two popular methods for anchoring an object to a concrete floor. We suggest you research the many options and methods for mounting your machine and choose the best that fits your specific application.

NOTICE

Anchor studs are stronger and more permanent alternatives to lag bolts; however, they will stick out of the floor, which may cause a tripping hazard if you decide to move your machine.

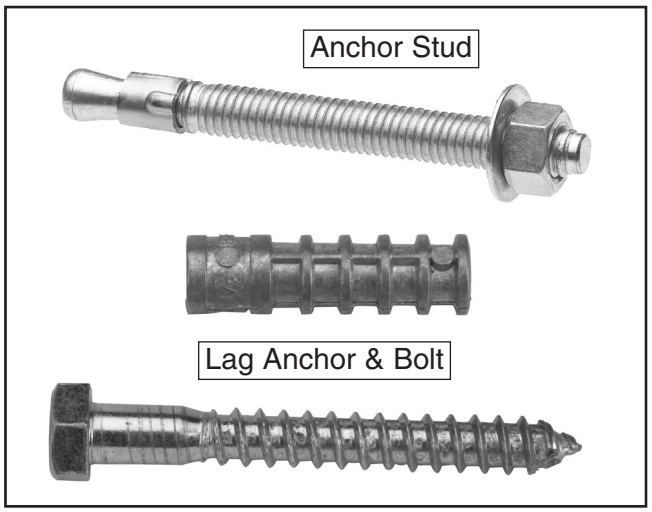
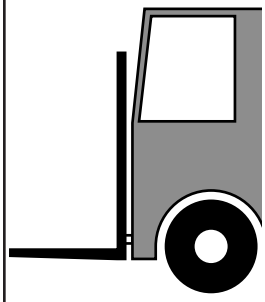


Figure 10. Typical fasteners for mounting to concrete floors.

NOTICE

We strongly recommend securing your machine to the floor if it is hardwired to the power source. Consult with your electrician to ensure compliance with local codes.

Moving & Placing



WARNING

This bandsaw is a heavy machine. Serious personal injury may occur if safe moving methods are not used. To be safe, get assistance and use power equipment rated for over 1000 lbs. to move the shipping crate and remove the machine from the crate.

To lift and move the bandsaw:

1. Position lifting straps under the head of the bandsaw and on the forklift forks, as shown in **Figure 11**.

Figure 11. Lifting straps positioned on bandsaw and forklift forks.

WARNING

Only us lifting straps and power lifting equipment rated for at least 1000 lbs., and in good working condition. If the bandsaw should fall or tip over while moving it, serious personal injury and property damage could result.

2. Unbolt the bandsaw from the pallet.

3. With two assistants to steady the bandsaw, slowly lift it just enough to clear the pallet and floor obstacles, then move it to the prepared location.

4. Use shims between the machine mounting flanges and the floor to level the bandsaw.

   Note: *Tighten the mounting fasteners evenly to avoid warping or cracking the cast iron base.*

Test Run

Once the bandsaw is in place, test run your machine to make sure it runs properly and is ready for regular operation. The test run consists of verifying the following: 1) The bandsaw motor powers up and runs correctly, and 2) the stop button safety feature works correctly.

If, during the test run, you cannot easily locate the source of an unusual noise or vibration, stop using the machine immediately, then review **Troubleshooting** on **Page 39**.

If you cannot find a remedy, contact our Tech Support at (570) 546-9663 for assistance.

To test run the bandsaw:

1. Read and follow the safety instructions at the beginning of the manual, and make sure the machine is setup properly.

2. Clear all tools and objects used during setup away from the machine.

3. Make sure the blade is properly tensioned and the blade guides are positioned correctly (refer to **Blade Tensioning** on **Page 29**, and **Adjusting Blade Guides** on **Page 31** for detailed instructions).

4. Connect the machine to the power source.

5. **Model G8146Z only:**

   a. Place the key in the Power Switch and turn it to the ON position—the Power Lamp should light.

   b. Push the Emergency Stop button in, then twist it clockwise so it pops out. When the Emergency Stop button pops out, the switch is reset and ready for operation.

   c. Push the Start button to turn the machine ***ON***.

6. **Models G8144Z & G8145Z only:** Push the Start button in to turn the machine ***ON***.

7. Verify that the machine is operating correctly.

   —When operating correctly, the machine runs smoothly with little or no vibration or rubbing noises.

   —Investigate and correct strange or unusual noises or vibrations before operating the machine further. Always disconnect the machine from power when investigating or correcting potential problems.

8. Verify that the motor is running in the correct direction.

   —When the motor is running in the correct direction, the blade will be moving down into the table.

   —If the motor is NOT running in the correct direction, stop the machine, disconnect the machine from power, and switch any two incoming power leads inside the motor wiring junction box (refer to the **Model G8144Z/G8145Z Control Panel & Inverter Wiring Diagram** on **Page 46**, or the **Model G8146Z Inverter Wiring Diagram** on **Page 49** for detailed illustrations).

Continued on next page ⟶

9. Model G8146Z only:

a. Press the Emergency Stop button to stop the machine.

b. WITHOUT resetting the switch, press the Start button. The machine should not start.

—If the machine does not start, the Emergency Stop button safety feature is working correctly.

—If the machine does start (with the stop button pushed in), immediately disconnect power to the machine. The Emergency Stop button safety feature is not working correctly. This safety feature must work properly before proceeding with regular operations. Call Tech Support for help.

c. Reset the Emergency Stop button by twisting it clockwise until it pops out.

d. Turn the Power Switch key to the OFF position—the Power Lamp should go out.

e. Press the Start button.

—If the machine does not start, the Power Switch safety feature is working correctly.

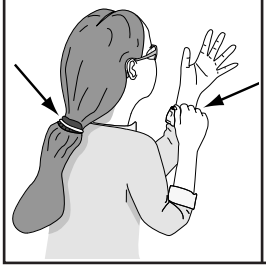
—If the machine does start with the Power Switch key turned to the OFF position, immediately disconnect power to the machine. The Power Switch safety feature is not working correctly. This safety feature must work properly before proceeding with regular operations. Call Tech Support for help.

SECTION 4: OPERATIONS

Operation Safety

⚠WARNING

Damage to your eyes and lungs could result from using this machine without proper protective gear. Always wear safety glasses and a respirator when operating this machine.



⚠WARNING

Loose hair and clothing could get caught in machinery and cause serious personal injury. Keep loose clothing and long hair away from moving machinery.

NOTICE

If you have never used this type of machine or equipment before, WE STRONGLY RECOMMEND that you read books, trade magazines, or get formal training before beginning any projects. Regardless of the content in this section, Grizzly Industrial will not be held liable for accidents caused by lack of training.

Basic Controls

Use the descriptions and figures below to become familiar with the basic controls of your bandsaw.

Model G8144Z/G8145Z

Digital Speed Display: Shows the blade speed in feet per minute (FPM).

Variable Speed Control: Adjusts the blade speed between 104–1300 FPM (Model G8144Z) or 108–1800 FPM (Model G8145Z).

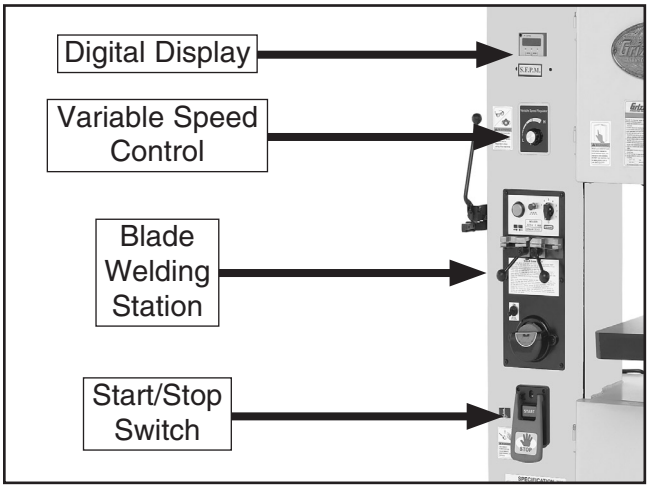


Figure 12. Model G8144Z/G8145Z electrical controls.

Blade Welding Station: Welds two blade ends to make a continuous loop when repairing a broken blade, fabricating a new blade, or making internal contour cuts.

Bandsaw Start/Stop Switch: Turns power ON/OFF to the bandsaw motor.

Blade Tensioning Handwheel: Increases/decreases blade tension when rotated.

Blade Post Lock Knob: Secures the blade post and upper blade guide assembly in position.

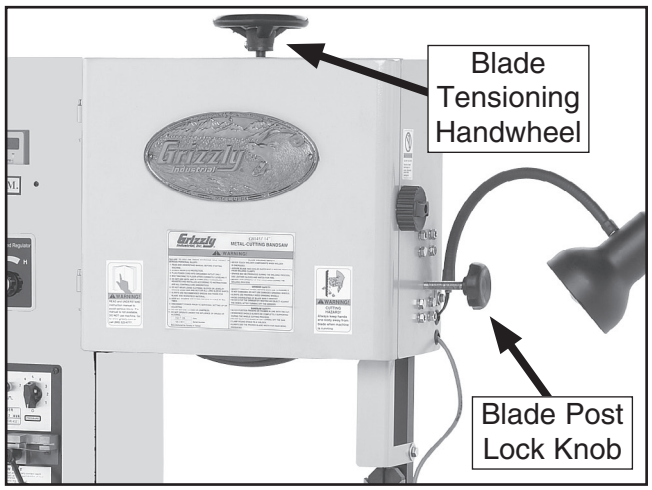


Figure 13. Model G8144Z/G8145Z blade controls.

Model G8146Z

Digital Speed Display: Shows blade speed in feet per minute (FPM).

Variable Speed Control: Adjusts the blade speed between 105–2100 FPM.

Blade Welding Station: Welds two blade ends to make a continuous loop when repairing a broken blade, fabricating a new blade, or making internal contour cuts.

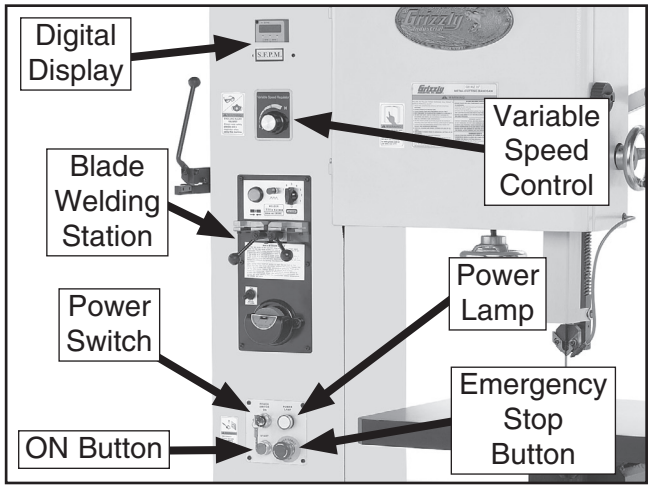


Figure 14. Model G8146Z electrical controls.

Power Switch: The main power switch for the entire machine.

Power Lamp: Lights when the Power Switch is turned ***ON*** and there is power to the machine.

ON Button: Turns the bandsaw motor ***ON***.

Emergency Stop Button: Turns the bandsaw motor ***OFF***.

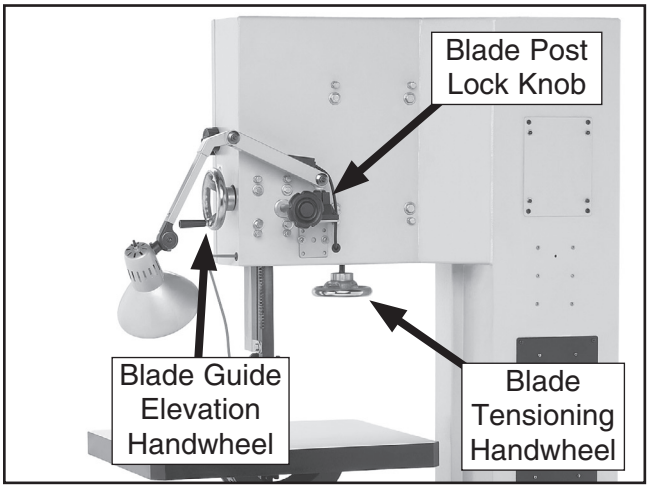


Figure 15. Model G8146Z blade controls.

Blade Post Lock Knob: Secures the blade post and upper blade guide assembly in position.

Blade Guide Elevation Handwheel: Raises/lowers the blade post and upper blade guide assembly when rotated.

Blade Tensioning Handwheel: Increases/decreases blade tension when rotated.

⚠WARNING

The bandsaw blade is sharp and can easily cut your hand or fingers. Always disconnect the power and wear leather gloves when making adjustments near the blade.

Blade Selection

Selecting the right blade for the cut requires a knowledge of various blade characteristics.

Blade Terminology

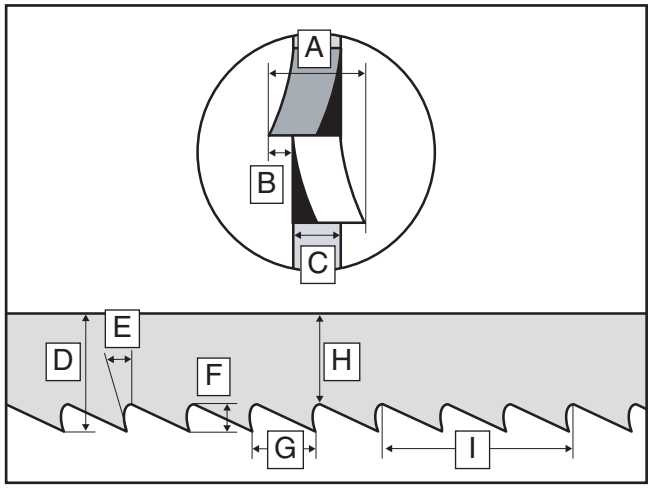


Figure 16. Bandsaw blade terminology.

A. Kerf: The amount of material removed by the blade during cutting.

B. Tooth Set: The amount each tooth is bent left or right from the blade.

C. Gauge: The thickness of the blade.

D. Blade Width: The widest point of the blade measured from the tip of the tooth to the back edge of the blade.

E. Tooth Rake: The angle of the tooth face from a line perpendicular to the length of the blade.

F. Gullet Depth: The distance from the tooth tip to the bottom of the curved area (gullet).

G. Tooth Pitch: The distance between tooth tips.

H. Blade Back: The distance between the bottom of the gullet and the back edge of the blade.

I. TPI: The number of teeth per inch measured from gullet to gullet.

Blade Length

Measured by the blade circumference, blade lengths are usually unique to the brand of your bandsaw and the distance between the wheels.

Model	Blade Length Range
G8144Z	94¼"–98¼"
G8145Z	105"–110"
G8146Z	133"–136"

Blade Width

Measured from the back of the blade to the tip of the blade tooth (the widest point), blade width is often the first consideration given to blade selection. Blade width dictates the largest and smallest curve that can be cut, as well as how accurately it can cut a straight line—generally the wider the blade, the straighter it will cut.

Model	Blade Width Range
G8144Z	⅛"–⅜"
G8145Z	⅛"–½"
G8146Z	⅛"–¾"

Always pick the blade width that best suits your operation.

Curve Cutting: Use the chart in **Figure 17** to choose the correct blade for curve cutting. Determine the smallest radius curve that will be cut on your workpiece and use the corresponding blade width.

The list below shows the minimum radius that can be cut by common blade widths.

Width	Radius
⅛"	⅛"
3⁄16"	⅜"
¼"	⅝"
⅜"	1¼"
½"	2½"
⅝"	3¾"
¾"	5½"

Figure 17. Blade width radii.

Tooth Set

Three common tooth sets are standard, wavy, and raker (see **Figure 18**), each removing material in a different manner to make the kerf in the workpiece.

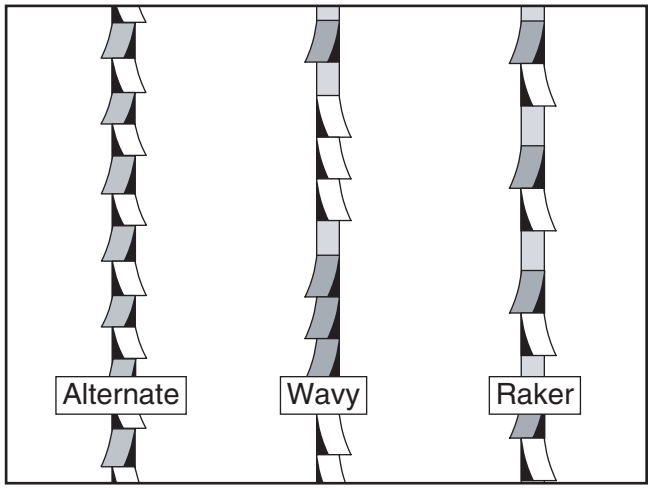


Figure 18. Bandsaw tooth sets.

Alternate: An all-purpose arrangement of bending the teeth evenly left and right of the blade. Generally used for milder metals.

Wavy: Generally three or more teeth in a group that are bent one way, followed by a non-set tooth, and then a group bent the other way. Recommended for straight cuts in thin metals or thin-wall tubing.

Raker: Three teeth in a recurring group—one bent left, next one bent right, and then a non-set tooth. The raker set is ideal for most contour cuts.

Tooth Type

The most common tooth types are described below and illustrated in **Figure 19**.

Standard or Raker: Equally spaced teeth set a "0" rake angle. Recommended for all purpose use.

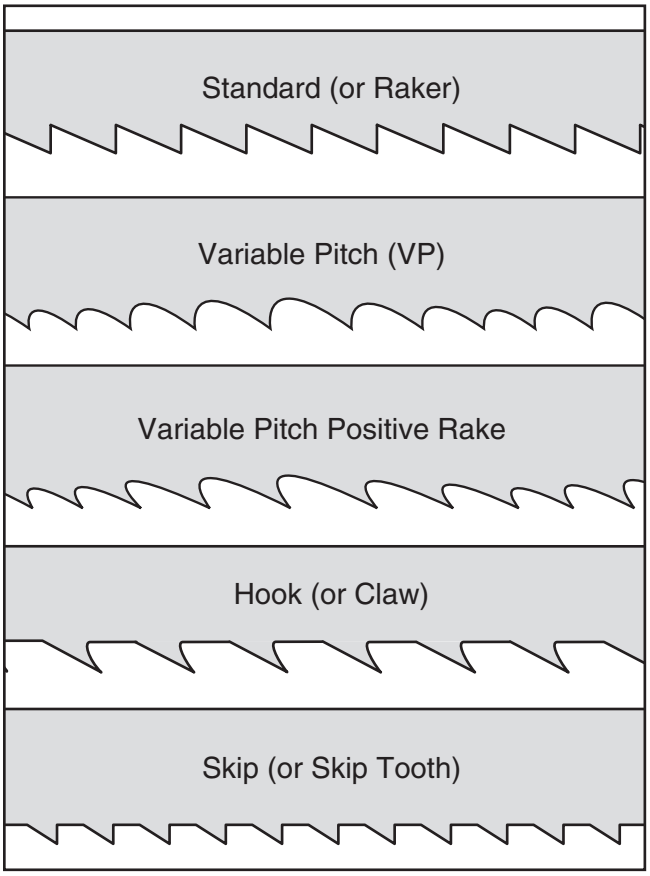


Figure 19. Bandsaw blade tooth types.

Variable Pitch (VP): Varying gullet depth and tooth spacing, a "0" rake angle, excellent chip removing capacity, and smooth cutting.

Variable Pitch with Positive Rake: Varying gullet depth and tooth spacing, a positive rake angle, better chip formation, and aggressive cutting.

Hook or Claw: Wide gullets (round or flat), equally spaced teeth, positive rake angle, and fast cut with good surface finish.

Skip or Skip Tooth: Wide, flat gullets, a "0" rake angle, equally spaced teeth, and recommended for non-ferrous materials.

Blade Pitch (TPI)

The chart below is a basic starting point for choosing teeth per inch (TPI) for variable tooth pitch blades and standard raker set bi-metal blades/HSS blades. However, for exact specifications of bandsaw blades that are correct for your operation, contact the blade manufacturer.

To select the correct blade pitch:

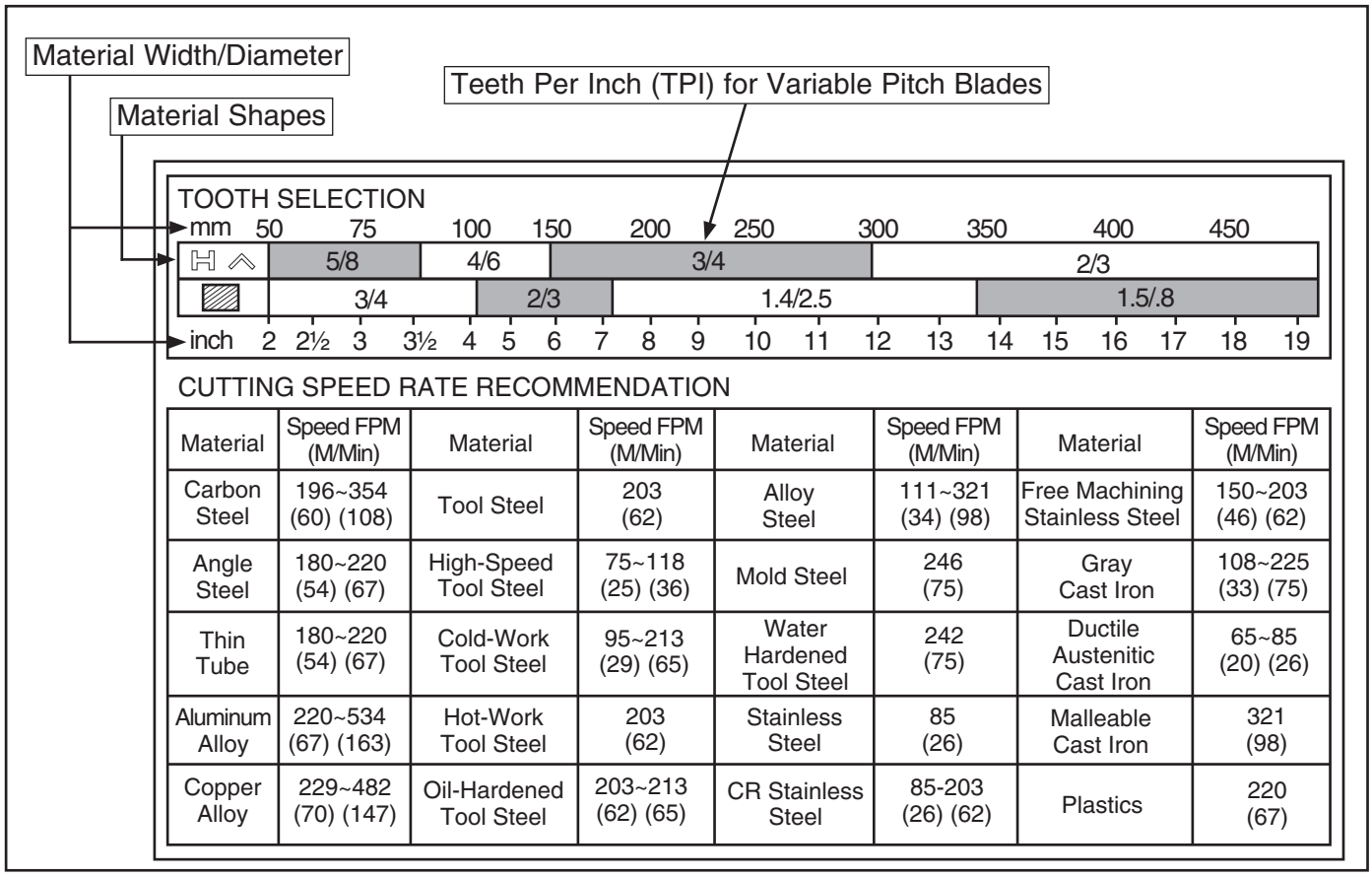
1. Measure the material thickness. This measurement is the length of cut taken from where the tooth enters the workpiece, sweeps through, and exits the workpiece.

2. Refer to the "Material Width/Diameter" row of the blade selection chart in **Figure 20**, and read across to find the workpiece thickness you need to cut.

3. Refer to the "Material Shapes" row and find the shape of the material to be cut.

4. In the applicable row, read across to the right and find the box where the row and column intersect. Listed in the box is the minimum TPI recommended for the variable tooth pitch blades.

5. The "Cutting Speed Rate Recommendation" section of the chart offers guidelines for various metals, given in feet per minute (FPM). Choose the speed closest to the number shown in the chart.



CUTTING SPEED RATE RECOMMENDATION

Material	Speed FPM (M/Min)	Material	Speed FPM (M/Min)	Material	Speed FPM (M/Min)	Material	Speed FPM (M/Min)
Carbon Steel	196~354 (60) (108)	Tool Steel	203 (62)	Alloy Steel	111~321 (34) (98)	Free Machining Stainless Steel	150~203 (46) (62)
Angle Steel	180~220 (54) (67)	High-Speed Tool Steel	75~118 (25) (36)	Mold Steel	246 (75)	Gray Cast Iron	108~225 (33) (75)
Thin Tube	180~220 (54) (67)	Cold-Work Tool Steel	95~213 (29) (65)	Water Hardened Tool Steel	242 (75)	Ductile Austenitic Cast Iron	65~85 (20) (26)
Aluminum Alloy	220~534 (67) (163)	Hot-Work Tool Steel	203 (62)	Stainless Steel	85 (26)	Malleable Cast Iron	321 (98)
Copper Alloy	229~482 (70) (147)	Oil-Hardened Tool Steel	203~213 (62) (65)	CR Stainless Steel	85-203 (26) (62)	Plastics	220 (67)

Figure 20. General guidelines for blade selection and speed chart.

Blade Breakage

Many conditions may cause a bandsaw blade to break. Blade breakage is unavoidable, in some cases, since it is the natural result of the peculiar stresses that bandsaw blades must endure. Blade breakage is also due to avoidable circumstances. Avoidable blade breakage is most often the result of poor care or judgement on the part of the operator when mounting or adjusting the blade or support guides.

The most common causes of blade breakage are:

- Faulty alignment or adjustment of the blade guides.
- Forcing or twisting a wide blade around a short radius.
- Feeding the workpiece too fast.
- Dull or damaged teeth.
- Over-tensioned blade.
- Top blade guide assembly set too high above the workpiece. Adjust the top blade guide assembly so that there is approximately ⅛"–¼" between the bottom of the assembly and the workpiece.
- Using a blade with a lumpy or improperly finished braze or weld.
- Continuously running the bandsaw when not in use.
- Leaving the blade tensioned when not in use.
- Using the wrong pitch (TPI) for the workpiece thickness. The general rule of thumb is to have not less than two teeth in contact with the workpiece at all times during cutting.

Blade Care & Break-In

Blade Care

A bandsaw blade is a delicate piece of steel that is subjected to tremendous strain. You can obtain longer use from a bandsaw blade if you give it fair treatment and always use the appropriate feed rate for your operation.

Be sure to select blades with the proper width, set, type, and pitch for each application. The wrong blades will produces unnecessary heat and shortens the life of the blade.

A clean blade will perform much better than a dirty blade. Dirty or gummed up blades pass through the cutting material with much more resistance than clean blades. This extra resistance also causes unnecessary heat.

Blade Break-In

The sharp teeth tips and edges of a new blade are extremely sharp, and cutting at too fast of a feed rate fractures of the beveled edges of the teeth and causes premature blade wear.

To properly break-in a new blade:

1. Choose the correct speed for the blade and material of the operation.
2. Reduce the feed pressure by half for the first 50–100 in^2 of material cut.
3. To avoid twisting the blade when cutting, adjust the feed pressure when the total width of the blade is in the cut.
4. Use the **Chip Inspection Chart** on **Page 27** to check the blade efficiency.

Chip Inspection Chart

The best method of evaluating the performance of your cutting operation is to inspect the chips that are formed. Refer to the chart below for chip inspection guidelines.

Chip Appearance	Chip Description	Chip Color	Blade Speed	Feed Pressure	Additional Actions
	Thin & Curled	Silver	***Good***	***Good***	
	Hard, Thick & Short	Brown or Blue	Decrease	Decrease	Check Cutting Fluid Mix
	Hard, Strong & Thick	Brown or Blue	Decrease	Decrease	Check Cutting Fluid Mix
	Hard, Strong & Thick	Silver or Light Brown	***Good***	Decrease Slightly	Check Blade Pitch
	Hard & Thin	Silver	Increase	Decrease	Check Blade Pitch
	Straight & Thin	Silver	***Good***	Increase	
	Powdery	Silver	Decrease	Increase	
	Curled Tight & Thin	Silver	***Good***	Decrease	Check Blade Pitch

Figure 21. Chip inspection chart.

Cutting Overview

The vertical metal cutting bandsaw has a flexible continuous blade that cuts in one direction. The type of bandsaw blade and the speed of the blade to be used depends on the workpiece material and the type of cut required.

This type of bandsaw can be used for straight cuts, angular cuts, and curved or contour cuts. Straight cuts are made using workpiece fixtures and with a light, even pressure against the blade. Angular cuts are made with the table and workpiece tilted at an angle other than "0".

When an internal contour cut is to be made, a hole must be drilled in the workpiece. The blade is then cut, fed through the hole in the workpiece, welded together again using the welding station, and re-installed on the bandsaw to make the cut. The welding station can also be used to fabricate new blades and repair broken blades.

The blade is supported by upper and lower tungsten steel blade guides that keep the blade from wandering during the cut.

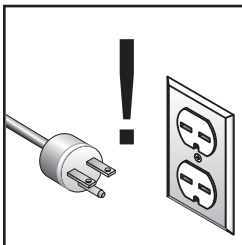
The efficiency of the cutting operation can be easily checked by examining the form and color of the metal chips.

⚠WARNING

ELECTROCUTION HAZARD

This bandsaw is not designed to be used with water soluble cutting fluid or coolant. If needed, use a small amount of oil-based lubricant.

Blade Changes



⚠WARNING

Always disconnect power to the machine when changing blades. Failure to do this may result in serious personal injury.

⚠CAUTION

All saw blades are dangerous and may cause personal injury. To reduce the risk of being injured, wear leather gloves when handling saw blades.

To replace the blade:

1. DISCONNECT BANDSAW FROM POWER!
2. Open the upper and lower wheel doors.
3. Release tension on the blade by rotating the tensioning handwheel.
4. Put on heavy gloves, then slide the blade off the upper and lower wheels, around the blade post, and through the table slit.
5. Install a new blade in reverse order.

⚠WARNING

Workpieces that cannot be supported or stabilized without a vise or jig should not be cut on a vertical metal-cutting bandsaw, because they can unexpectedly move while cutting and draw the operator's hands into the blade causing serious personal injury. Examples are chains, cables, round or oblong-shaped workpieces, workpieces with internal or built-in moving or rotations parts, etc.

6. Position the back edge of the blade so that it is next to, but not against, the flange of the top wheel (see **Figure 22**).

   Note: *Excessive blade contact with the wheel flange during operation could lead to blade and wheel damage.*

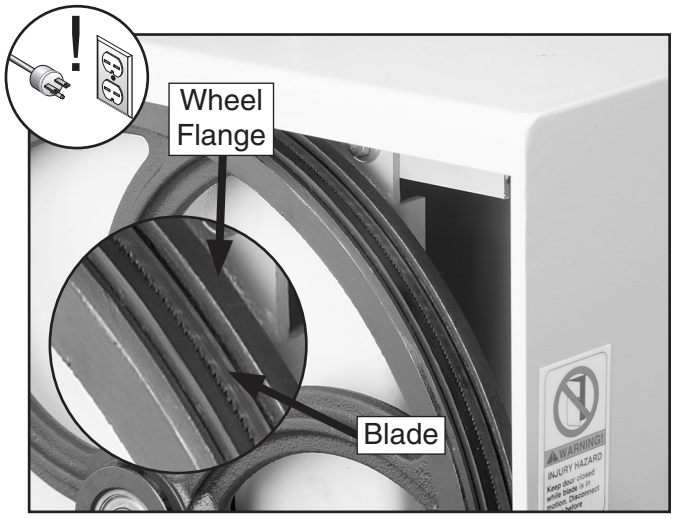


Figure 22. Back edge of blade next to wheel flange.

7. Rotate the top wheel by hand several times to make sure the blade tracks evenly without wandering across the wheel surface.

   Note: *If the blade does wander across the wheel and away from the flange, the wheel alignment may need to be adjusted. Refer to* ***Wheel Alignment*** *on* ***Page 42*** *for detailed instructions.*

8. Re-tension the blade (refer to **Blade Tensioning** on **this page**).

9. Check the upper and lower blade guides for clearance (refer to **Adjusting Blade Guides** on **Page 31**).

   Note: *Generally if the replacement blade is the same gauge, width, and type, blade guide adjustment is not necessary. Otherwise, you must adjust the blade guides.*

10. Close and secure the upper and lower wheel doors.

Blade Tensioning

NOTICE

To prolong blade life, release the tension on the blade if the machine will be idle for an extended period of time.

Proper blade tension reduces the risk of blade breakage and improves cutting performance.

To correctly tension the blade:

1. DISCONNECT BANDSAW FROM POWER!

2. Open the upper wheel door, and raise the blade post and upper blade guide assembly to the highest position.

3. Check the side-to-side deflection of the blade midway between the upper blade guide and the table. The proper amount of deflection should be approximately 3/8" when moderate pressure is applied (see **Figure 23**).

   Note: *The quickest and easiest way to check blade tension is to use the Model H5408 Blade Tensioning Gauge to reach a blade tension of 25,000–30,000 PSI (refer to* ***Page 36****)*

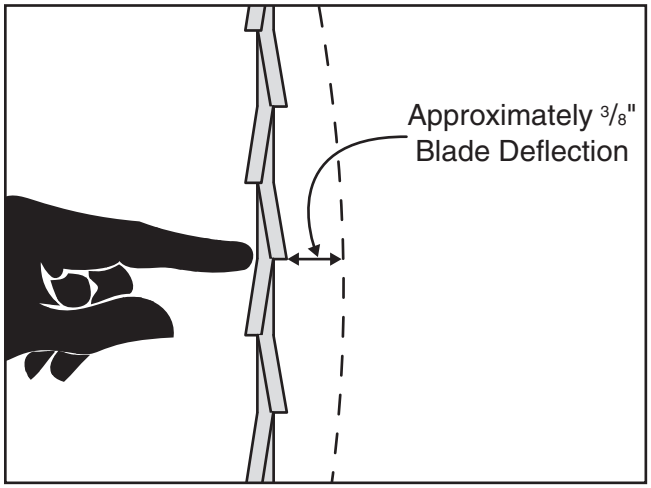


Figure 23. Blade deflection when correctly tensioned.

4. Make small adjustments to the blade tensioning handwheel, then rotate the top wheel by hand several times before checking the blade deflection again. Repeat this step until you are satisfied.

   Note: *Make sure the blade tracks next to, but not touching, the upper wheel flange as you rotate the upper wheel by hand.*

5. Close the upper wheel door and reposition the guide post.

Guide Post

The guide post assembly is used for two purposes: 1) To properly position the blade guard to protect the operator from the exposed blade between the workpiece and the upper wheel housing, and 2) to position the upper blade guides close to the workpiece for blade support.

In order to cut accurately and safely, position the bottom of the upper blade guides approximately ¼" above the workpiece—this positioning provides the greatest blade support and minimizes the amount of blade exposed to the operator during operation.

To properly position the guide post:

1. DISCONNECT BANDSAW FROM POWER!

2. **Model G8144Z/G8145Z (Figure 24):**

   a. Hold the guide post with one hand and loosen the guide post lock knob with the other.

   b. Position the bottom of the upper blade guides approximately ¼" above the workpiece, then re-tighten the lock knob to secure the setting.

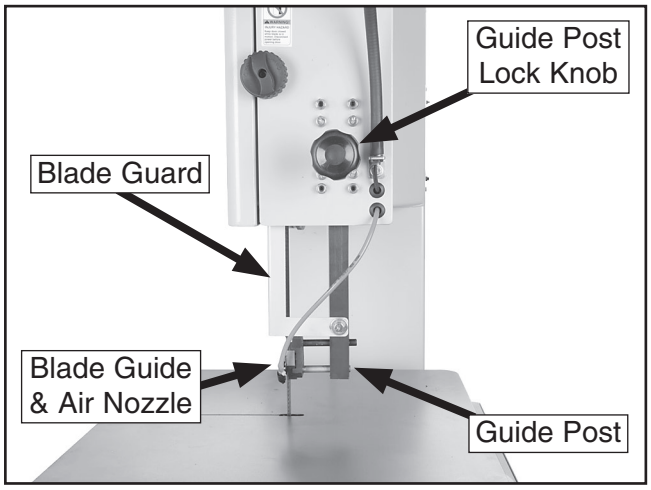


Figure 24. Model G8144Z/G8145Z guide post assembly.

3. **Model G8146Z (Figure 25):**

   a. Loosen the guide post lock knob.

   b. Use the guide post elevation handwheel to position the bottom of the upper blade guides approximately ¼" above the workpiece, then re-tighten the lock knob.

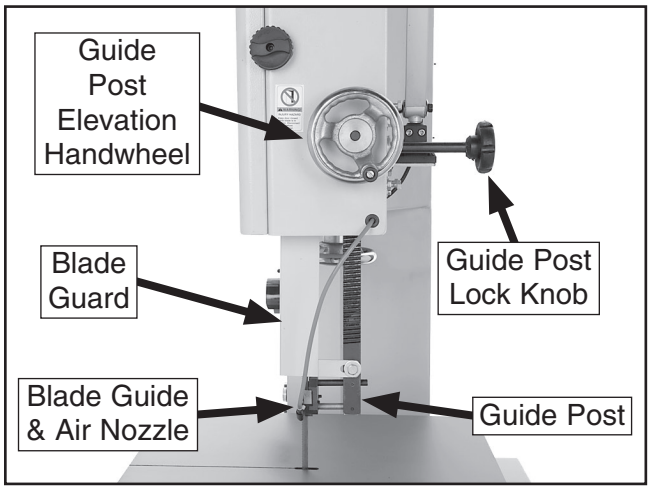
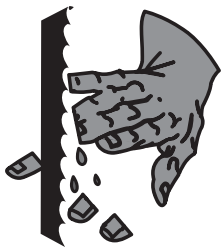


Figure 25. Model G8146Z guide post assembly.



⚠WARNING

The bandsaw blade is sharp and can easily cut your hand or fingers. Always disconnect the power and wear leather gloves when making adjustments near the blade.

Adjusting Blade Guides

The blade guides provide side-to-side and back support to keep the blade straight while cutting. The blade guides and the back support have tungsten steel facing to reduce wear on the guides. Properly adjusted blade guides are essential to making accurate cuts.

To properly adjust the upper and lower blade guides:

1. DISCONNECT BANDSAW FROM POWER!

2. Make sure the bandsaw blade is properly tensioned (**Page 29**) and the blade post is in the correct position and locked.

3. Use a 6mm hex wrench to loosen the cap screws that secure the blade guide bracket and blade support (see **Figures 26–27**).

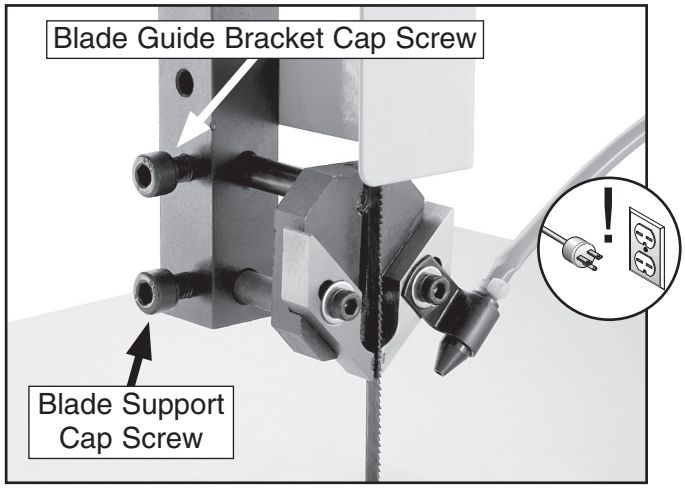


Figure 26. Upper blade guides and bracket.

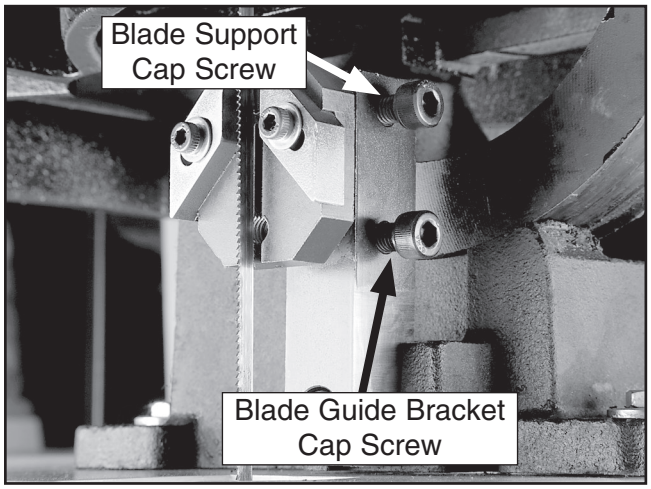


Figure 27. Lower blade guides and bracket.

4. Position the blade guides so that they are approximately 1/16" behind the tooth gullets (see **Figure 28**), then re-tighten the blade guide bracket cap screw.

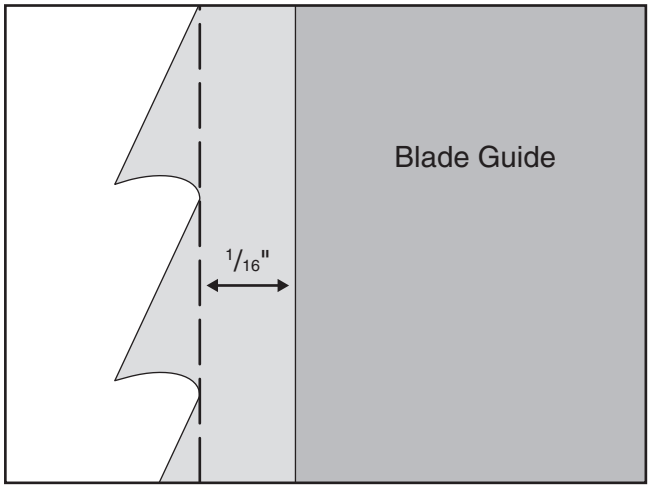


Figure 28. Blade guides positioned approximately 1/16" behind tooth gullets.

Note: *The blade guards must be adjusted far enough back so that they are behind the tooth gullets when the blade is deflected back against the blade support.*

5. Slide the blade support (see **Figure 29**) up to, but not touching, the back of the blade, then re-tighten the blade support cap screw.

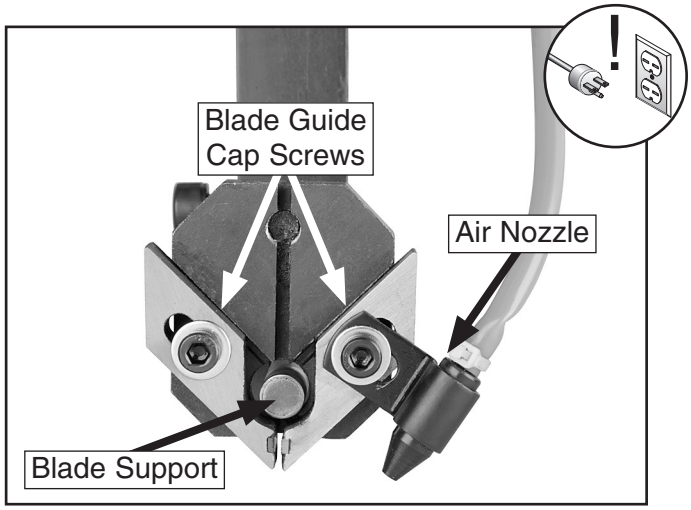


Figure 29. Blade guide assembly (upper assembly shown without blade for clarity).

6. Rotate the upper wheel by hand so that the blade weld is between the blade guides.

7. Use a 4mm hex wrench to loosen the blade guide cap screws (see **Figure 29**).

8. Fold a crisp dollar bill in half and place it over the blade (between the blade guides and the blade), as shown in **Figure 30**.

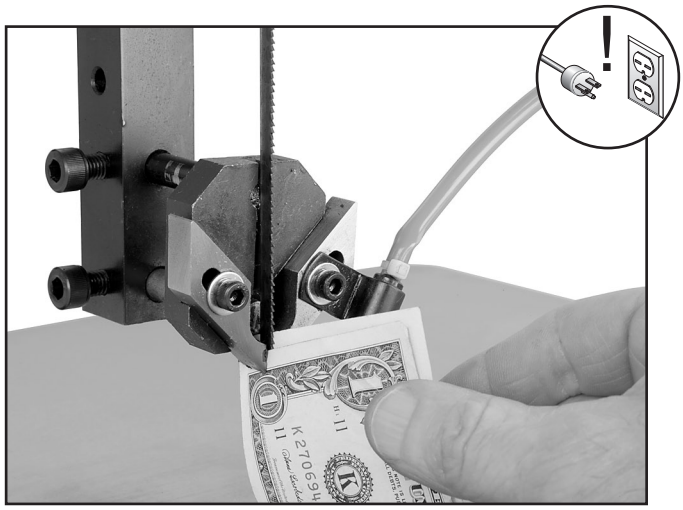


Figure 30. Using a dollar bill to set blade guide spacing.

9. Lightly pinch the dollar bill against the blade with the blade guides, re-position the air nozzle if necessary, then re-tighten the blade guide cap screws.

Note: *The goal is to position the blade guides as close as possible to the blade without touching it during operation.*

Adjusting Table Tilt

To perform beveled cuts, the bandsaw table tilts 15° to the left and 45° to the right.

To adjust the table tilt:

1. DISCONNECT BANDSAW FROM POWER!

2. Use a 23mm wrench to loosen the hex nut underneath the rear of the table (see **Figure 31**).

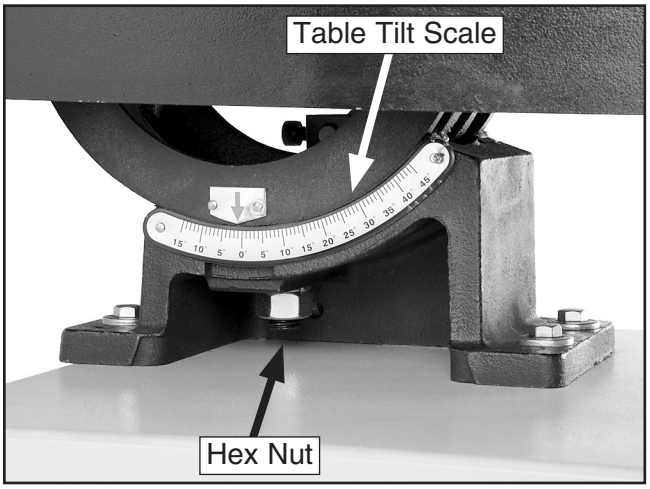


Figure 31. Table tilt scale and hex nut.

3. Using the table tilt scale, adjust the angle of the table for your operation, then re-tighten the hex nut.

Blade Welding

Being able to quickly and safely weld a bandsaw blade comes in handy for the following situations:

- To repair a broken blade that is still sharp and useful.
- To fabricate a new blade from a larger section of blade material to fit your bandsaw.
- To re-join a blade that has been purposely cut for making an internal contour cut.

Your metal cutting bandsaw is equipped with a blade welder that uses electrical resistance to heat and fuse the blade ends together. This process will leave the joint brittle, so it will need to be annealed to give it strength and flexibility.

⚠WARNING

The electric current that flows through the blade welder during operation could cause serious personal injury or death. To avoid the risk of electrocution, never touch any metal part of the welding station during blade welding or annealing.

To weld the ends of bandsaw together:

1. Turn the bandsaw motor ***OFF***.
2. Place the blade evenly against the back of the blade shear and firmly pull the handle down to square off the blade end (see **Figure 32**).

Figure 32. Using the blade shear to cut the blade.

Note: *To make a proper blade weld, the ends of the blade must be evenly butted together during the welding process. If necessary, use the grinder to square up the ends or remove any teeth that are in the welding zone (see **Figures 33–34**).*

Figure 33. Using the grinder to square up the blade end.

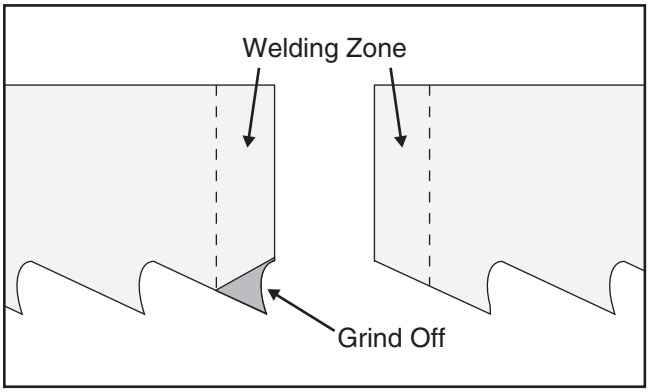


Figure 34. Blade ends and welding zone.

3. Loosen the welding clamps by pulling the lock levers down.

4. Position the back of one blade end evenly against the back of the welding clamp so that the end is midway between the two clamps, then rotate the lock lever all the way up to hold the blade end in place (see **Figure 35**).

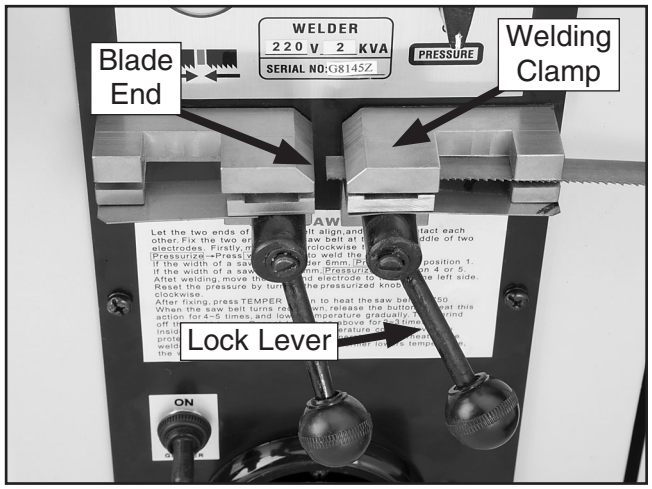


Figure 35. Blade end properly position in welding clamp and locked in place.

5. Set the clamping pressure dial (see **Figure 36**) to "0".

   Note: *As the blade material melts to form the weld, pressure is applied to the joint by the welding clamps. The correct amount of pressure is set with the clamping pressure dial in a later step.*

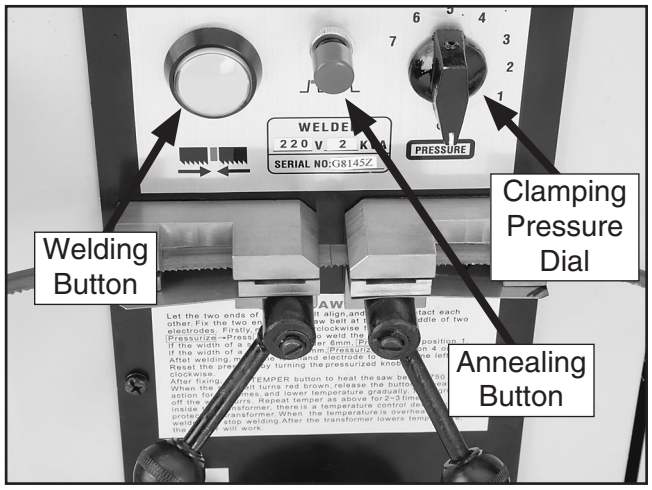


Figure 36. Blade ends in correct position for welding.

6. Place the other blade end in the opposite welding clamp and position it so that it evenly butts up against the opposing blade end, then lock it in place by rotating the lock lever all the way up, as shown in **Figure 36**.

   Note: *For a good blade weld, it is critical that the blade ends evenly butt up against each other.*

7. Use the chart in **Figure 37** and set the correct clamping pressure setting for the blade.

Blade Width	Pressure Setting
Up to ¼"	1
¼" to ⅜"	2–3
Above ⅜"	4+

Figure 37. Blade clamping pressure chart.

⚠WARNING

Burning sparks from the blade welding operation may be thrown in all directions and could cause serious personal injury or fire. When using the blade welder, always protect yourself from the flying sparks and have fire extinguishing equipment readily available. DO NOT weld near flammables.

8. Press and release—DO NOT hold—the welding button.

   Note: *There is a limit switch that senses the electrical resistance between the blade ends. If there is a adequate amount of welded material, the limit switch will not allow the welding button to activate the operation again.*

9. Rotate the lock levers down to release the welding clamps, then rotate the clamping pressure dial to "0".

10. Inspect the weld. The welded joint should be even across the width of the blade with no gaps (see **Figure 38**).

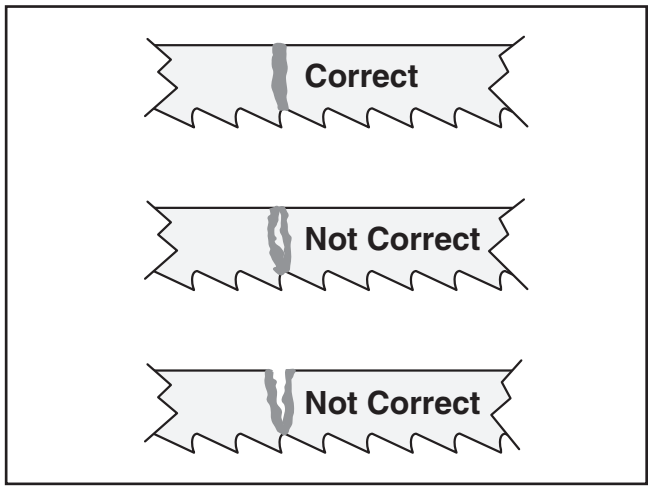


Figure 38. Blade welded joint examples.

—If the weld is satisfactory, continue to **Step 11**.

—If the weld is NOT satisfactory, begin again at **Step 2**.

11. Set the clamping pressure dial to 4 or greater to bring the welding clamps close together.

12. Place the blade in the welding clamps with the weld centered between the clamps and re-tighten the lock levers.

Note: *The welding operation has left the blade joint brittle. Annealing will allow the material to cool in gradual manner, giving the weld strength and flexibility.*

13. Rapidly press and release—DO NOT hold—the annealing button two or three times until the weld zone turns dull red.

14. Repeat **Step 13** three to four more times, allowing the weld to cool for about 30 seconds between each repetition.

15. Allow the blade to cool, then re-inspect the weld.

16. Grind away the weld flash flat on the top and bottom of the joint so that the blade will run smoothly on the wheels.

Note: *Make sure not to grind the teeth or blade body, or overheat the blade during grinding—this will weaken the blade.*

17. Re-clamp the blade in the welding clamps with the joint centered, then repeat **Step 13** twice more.

18. Test the strength and flexibility of the weld by bending the blade in an arc similar to that of the bandsaw wheels. The blade should bend smoothly without any angles (see **Figure 39**).

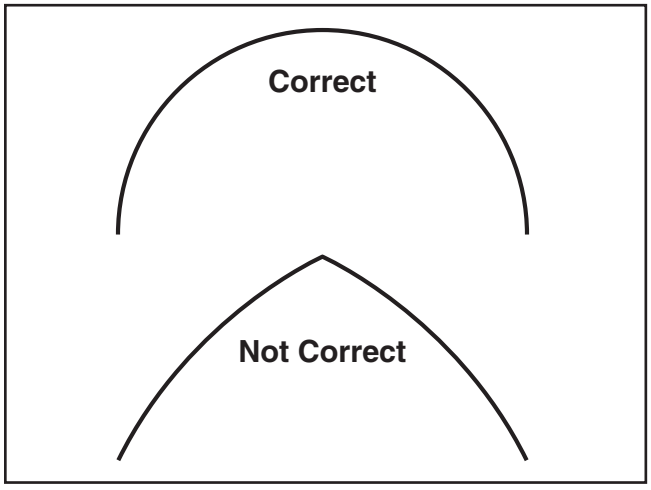


Figure 39. Correct blade weld bend for strength and flexibility.

NOTICE

For good metal-to-metal contact between the welding clamps and the blade, make sure the blade material and the clamps are free from any debris or flash before each use.

T20501—Face Shield, 4" Crown, Clear
T20502—Face Shield, 7" Crown, Clear
T20448—Economy Clear Safety Glasses
T20452—"Kirova" Anti-Relective Glasses
T20456—"Dakura" Clear Safety Glasses
H0736—Shop Fox® Safety Glasses
These glasses meet ANSI Z87.1-2003 specifications. Buy extras for visitors or employees. You can't be too careful with shop safety!

Figure 40. Our most popular eye protection.

H5408—Blade Tensioning Gauge
The Blade Tensioning Gauge ensures long blade life, reduced blade breakage, and straight cutting by indicating correct tension. A precision dial indicator provides you with a direct readout in PSI.

Figure 41. H5408 Blade Tensioning Gauge.

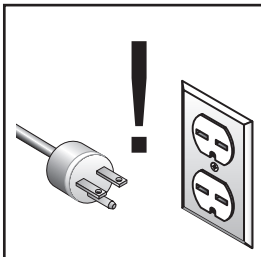
Grizzly Bandsaw Blades

Model	Material	Length	Width	TPI /Style
G8803	Tool Steel	97"	¼"	6/Hook
G8804	Tool Steel	97"	¼"	14/Raker
G8805	Bi-Metal	97"	¼"	6/Hook
G8806	Bi-Metal	97"	¼"	10-14/VP
G8807	Bi-Metal	97"	½"	10-14/VP
G8808	Tool Steel	108"	¼"	6/Hook
G8809	Tool Steel	108"	¼"	14/Raker
G8810	Bi-Metal	108"	¼"	6/Hook
G8811	Bi-Metal	108"	¼"	10-14/VP
G8812	Bi-Metal	108"	½"	10-14/VP
G8813	Tool Steel	134"	¼"	6/Hook
G8814	Tool Steel	134"	¼"	14/Raker
G8815	Bi-Metal	134"	¼"	6/Hook
G8816	Bi-Metal	134"	¼"	10-14/VP
G8817	Bi-Metal	134"	½"	10-14/VP

G5562—SLIPIT® 1 Qt. Gel
G5563—SLIPIT® 12 oz Spray
G2871—Boeshield® T-9 12 oz Spray
H3788—G96® Gun Treatment 12 oz Spray

Figure 42. Recommended products for protecting unpainted cast iron/steel part on machinery.

SECTION 6: MAINTENANCE



⚠WARNING
Always disconnect power to the machine before performing maintenance. Failure to do this may result in serious personal injury.

Schedule

For optimum performance from your machine, follow this maintenance schedule and refer to any specific instructions given in this section.

Daily:
- Check/correct loose mounting bolts.
- Check/correct damaged or dull saw blade.
- Check/correct worn or damaged wires.
- Clean/protect table.
- Clean metal chips from upper and lower wheel areas, and empty bottom chip pan.
- Correct any other unsafe condition.

Monthly:
- Check for V-belt tension, damage, or wear.
- Lubricate tension leadscrews and guide post rack.
- Remove the blade and clean the wheels.

Cleaning

Use a brush and a shop vacuum to remove chips and other debris from the machine. Keep the table rust-free with regular applications of products like G96® Gun Treatment, SLIPIT®, or Boeshield® T-9 (see **Section 5: Accessories** on **Page 36** for more details).

Once a month, remove the blade and thoroughly clean all metal chips or built-up grease from the wheel surfaces. Redress the rubber tires if necessary.

When cleaning the wheel areas, empty and clean the chip pan (see **Figure 43**).

Figure 43. Lower wheel chip pan.

Redressing Rubber Tires

As the bandsaw ages, the rubber tires on the wheel may need to be redressed if they become hardened or glazed over. Redressing the rubber tires improves blade tracking and reduces vibration/blade lead.

If the rubber tires become too worn, then blade tracking will become extremely difficult. At that point, redressing will no longer be effective, and the rubber tires must be replaced.

To redress the rubber tires:

1. DISCONNECT BANDSAW FROM POWER!
2. Put on heavy gloves and remove the blade.
3. Use a brush and shop vacuum to clean any chips from the rubber tires.
4. Hold a piece of 100-grit sandpaper against the rubber tire and rotate the wheel by hand. Only redress the rubber enough to expose a fresh rubber surface.

Lubrication

The bearings on your bandsaw are factory lubricated and sealed. Merely leave them alone unless they need to be replaced.

When needed, brush a light coat of multi-purpose grease on the tension leadscrew (all Models) and guide post rack (Model G8146Z only) to maintain smooth operation (see **Figures 44 & 45**).

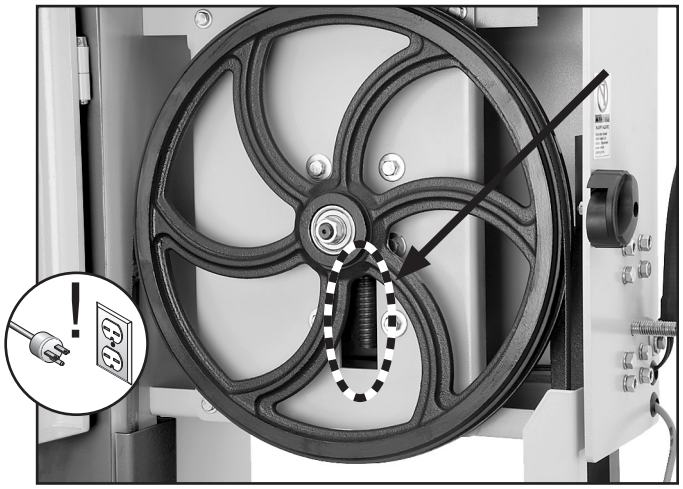


Figure 44. Model G8144Z/G8145Z tension leadscrew.

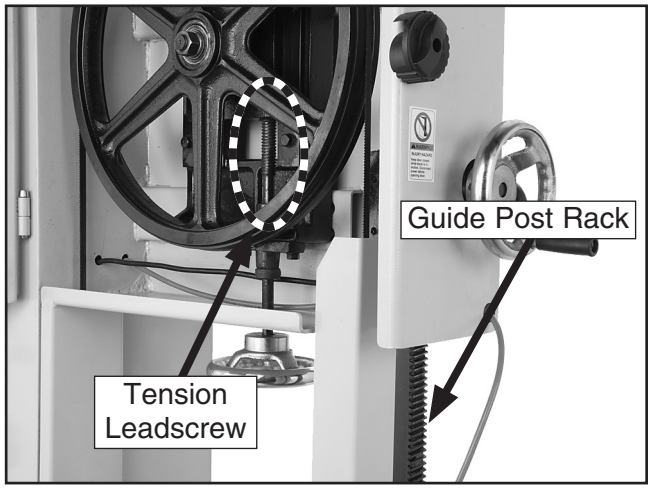


Figure 45. Model G8146Z tension leadscrew and guide post rack.

If the table becomes difficult to tilt, position it so that you can brush a thin coat of multi-purpose grease on the trunnion surface (see **Figure 46**).

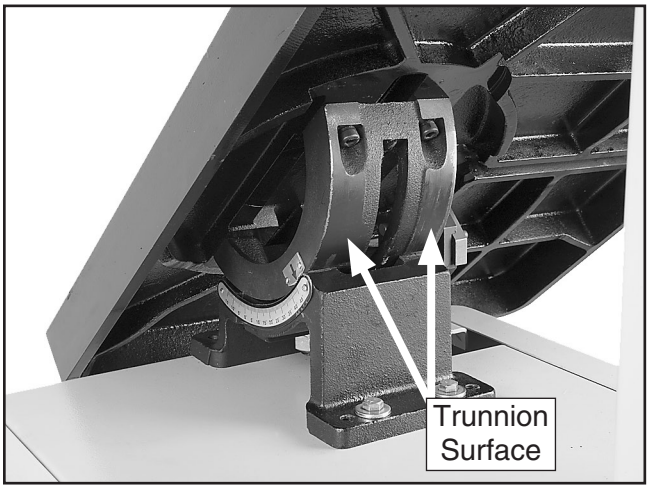
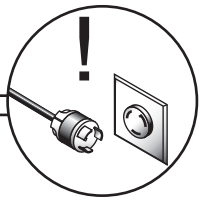


Figure 46. Table tilted to expose trunnion surface.

SECTION 7: SERVICE

Review the troubleshooting and procedures in this section to fix or adjust your machine if a problem develops. If you need replacement parts or you are unsure of your repair skills, then feel free to call our Technical Support at (570) 546-9663.

Troubleshooting



Motor & Electrical

Symptom	Possible Cause	Possible Solution
Machine does not start or a breaker trips.	1. Power switch key is removed or not in ON position (Model G8146Z only).	1. Install power switch key and turn it to the ON position.
	2. Emergency stop push-button is engaged/faulty (Model G8146Z only).	2. Rotate clockwise until it pops out; replace it if faulty.
	3. Plug/receptacle is at fault or wired incorrectly.	3. Test for good contacts; correct the wiring.
	4. Motor connection wired incorrectly.	4. Correct motor wiring connections (**Page 51**).
	5. Wall fuse/circuit breaker is blown/tripped.	5. Ensure circuit size is suitable for this machine; replace weak breaker.
	6. Power supply switched OFF or is at fault.	6. Ensure power supply is switched on; ensure power supply has the correct voltage.
	7. Wiring is open/has high resistance.	7. Check for broken wires or disconnected/corroded connections, and repair/replace as necessary.
	8. Start/Stop switch is at fault (Model G8144Z/G8145Z).	8. Replace Start/Stop switch.
	9. Inverter is at fault.	9. Replace inverter.
	10. Motor is at fault.	10. Test/repair/replace.
Machine stalls or is overloaded.	1. Feeding workpiece too fast.	1. Reduce feed rate; increase blade speed.
	2. Workpiece alignment is poor.	2. Eliminate workpiece binding; use jig, fence, guide, clamps, roller table, or push blocks as required for workpiece alignment control.
	3. Wrong workpiece material or blade.	3. Use metal with correct properties for your type of machining; match blade with workpiece and operation.
	4. Blade is slipping on wheels.	4. Adjust blade tracking and tension (**Page 29**), redress rubber wheel tires if necessary (**Page 37**).
	5. Motor connection is wired incorrectly.	5. Correct motor wiring connections (**Page 51**).
	6. V-belt(s) slipping.	6. Replace bad V-belt(s) as a matched set, align pulleys, and re-tension (**Page 41**).
	7. Plug/receptacle is at fault.	7. Test for good contacts; correct the wiring.
	8. Pulley/sprocket slipping on shaft.	8. Replace loose pulley/shaft.
	9. Motor bearings are at fault.	9. Test by rotating shaft; rotational grinding/loose shaft requires bearing replacement.
	10. Machine is undersized for the task.	10. Use sharp blade with lower TPI; reduce the feed rate; use a small amount of oil-based coolant if necessary.
	11. Motor has overheated.	11. Clean off motor, let cool, and reduce workload.
	12. Motor is at fault.	12. Test/repair/replace.

Motor & Electrical (continued)

Symptom	Possible Cause	Possible Solution
Machine has vibration or noisy operation.	1. V-belt(s) worn or loose.	1. Inspect/replace belts with a new matched set (**Page 41**).
	2. Pulley is loose.	2. Realign/replace shaft, pulley, set screw, and key as required.
	3. Motor mount loose/broken.	3. Tighten/replace.
	4. Machine is incorrectly mounted or sits unevenly.	4. Tighten/replace anchor studs in floor; relocate/shim machine.
	5. Workpiece is loose.	5. Use the correct holding fixture and reclamp workpiece.
	6. Motor fan is rubbing on fan cover.	6. Replace dented fan cover; replace loose/damaged fan.
	7. Motor bearings are at fault.	7. Test by rotating shaft; rotational grinding/loose shaft requires bearing replacement.
	8. Blade is at fault.	8. Re-tension/replace blade (**Pages 28 & 29**).
	9. Blade wheels out of alignment.	9. Re-align blade wheels (**Page 42**).

Cutting Operations

Symptom	Possible Cause	Possible Solution
Machine slows when operating.	1. Feeding workpiece too fast.	1. Reduce feed rate/increase blade speed.
	2. Blade is dull.	2. Replace blade (**Page 28**).
Ticking sound when the saw is running.	1. Blade weld contacting blade guide/support (a light ticking is normal).	1. Inspect/re-grind blade weld (**Page 33**); re-adjust blade guides/support (**Page 31**).
	2. Blade weld may be failing.	2. Inspect weld and re-weld blade if necessary (**Page 33**), or replace blade (**Page 28**).
Blade contacting table.	1. Table improperly mounted or aligned.	1. Properly align table (**Page 44**).
Vibration when cutting.	1. Workpiece is loose.	1. Use the correct holding fixture and reclamp workpiece.
	2. Loose or damaged blade.	2. Re-tension/replace blade (**Pages 28 & 29**).
	3. Metal chip buildup on wheels.	3. Clean metal chips from wheels.
Rough or poor quality cuts.	1. Feeding workpiece too fast.	1. Reduce feed rate/increase blade speed.
	2. Incorrect blade for operation; worn or damaged blade.	2. Use the correct blade for the operation (**Page 23**); replace worn or damaged blade (**Page 28**).
	3. Blade guides/support adjusted incorrectly.	3. Correctly adjust blade guides/support (**Page 31**); set the blade guides approximately 1/8" above workpiece.
Blade wanders or doesn't cut straight.	1. Blade lead.	1. Re-tension/replace blade (**Pages 28 & 29**).
	2. Metal chip buildup on wheels.	2. Clean metal chips from wheels.
Cuts are not square (vertically).	1. Table tilt is not adjusted to "0".	1. Adjust table to "0" tilt.
	2. Table is not square to the blade.	2. Adjust table square with blade (**Page 44**).
Wheel is noisy.	1. Wheel bearing is worn out.	1. Replace wheel bearing.
	2. V-belt is too tight (lower wheel).	2. Check/re-tension the V-belt (**Page 41**).
Blade does not track consistently, correctly, or at all.	1. Wheels are not coplanar or aligned with each other.	1. Adjust wheels to be coplanar/aligned with one another (**Page 42**).
	2. Rubber tires on wheels are worn out.	2. Redress the rubber tires on the wheels (**Page 37**).

V-Belt Pulley Alignment

The correct alignment of the motor and lower wheel pulleys helps to ensure correct and even tension of the V-belts, proper power transmission, and reduced V-belt heat and wear during operation.

Remove the rear motor access panel, and use a straightedge across both pulleys, as shown in **Figure 47**, to check the pulley alignment.

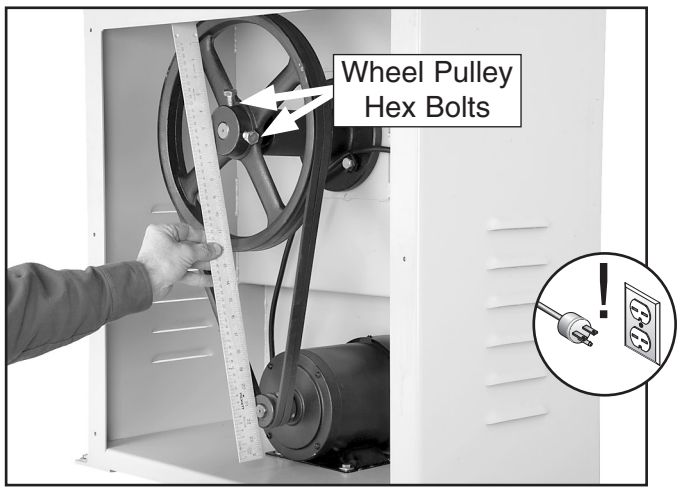


Figure 47. Checking pulley alignment.

If necessary, use a 19mm wrench to loosen the two hex nuts securing the wheel pulley to its shaft, align the wheel pulley with the motor pulley, then re-tighten the hex bolts.

Tensioning/ Replacing V-Belts

To ensure optimum power transfer from the motor to the blade without slipping, the V-belts must be in good condition and operate under proper tension. Check V-belt tension at least every three months—more often if the bandsaw is used daily. V-belts stretch with use and must be periodically re-tensioned.

Replace the V-belts as a matched set if they are cracked, frayed, or excessively worn.

To check/tension/replace the V-belts:

1. DISCONNECT BANDSAW FROM POWER!
2. Remove the rear motor access panel.
3. Make sure the motor and lower wheel pulleys are correctly aligned.
4. Push the center of each V-belt as illustrated in **Figure 48**, using moderate force. When tensioned correctly, the deflection should be about ¾".

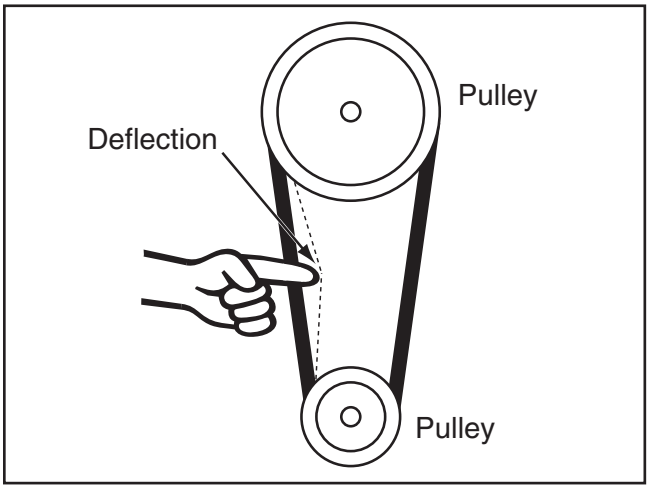


Figure 48. Checking for correct V-belt tension.

—If the deflection is correct and the V-belts are in good condition, no further action is required. Replace the rear motor access panel.

—If the deflection is more than or less than ¼" or the V-belts need to be replaced, then continue to **Step 5**.

5. Use a 12mm wrench to loosen the four motor mount hex bolts (see **Figure 49**).

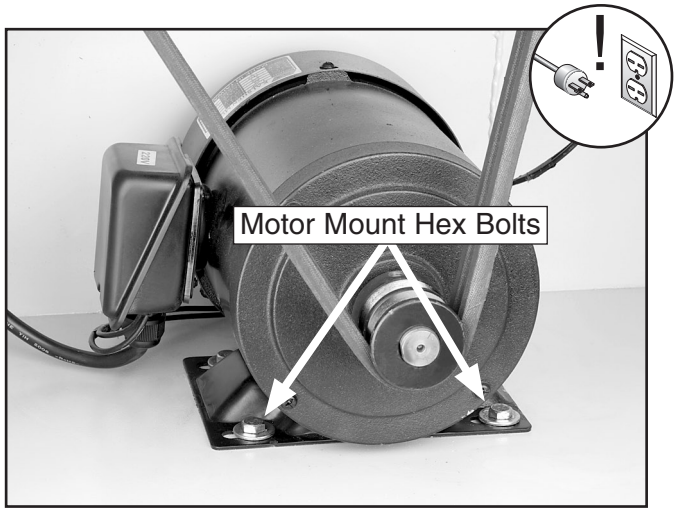


Figure 49. Motor mount hex bolts.

6. If it is necessary to replace the V-belts, slide the motor toward the wheel pulley to relieve the tension, then replace the V-belts with a new matched set.

7. Position the motor to adjust the V-belt tension until they have the correct deflection, then re-tighten the hex bolts.

Wheel Alignment

When the wheels are coplanar (in the same plane), the bandsaw cuts straighter, with much less vibration, heat, and blade wear because the blade is continuously balanced on the wheels. Refer to **Figure 50** to better understand this arrangement.

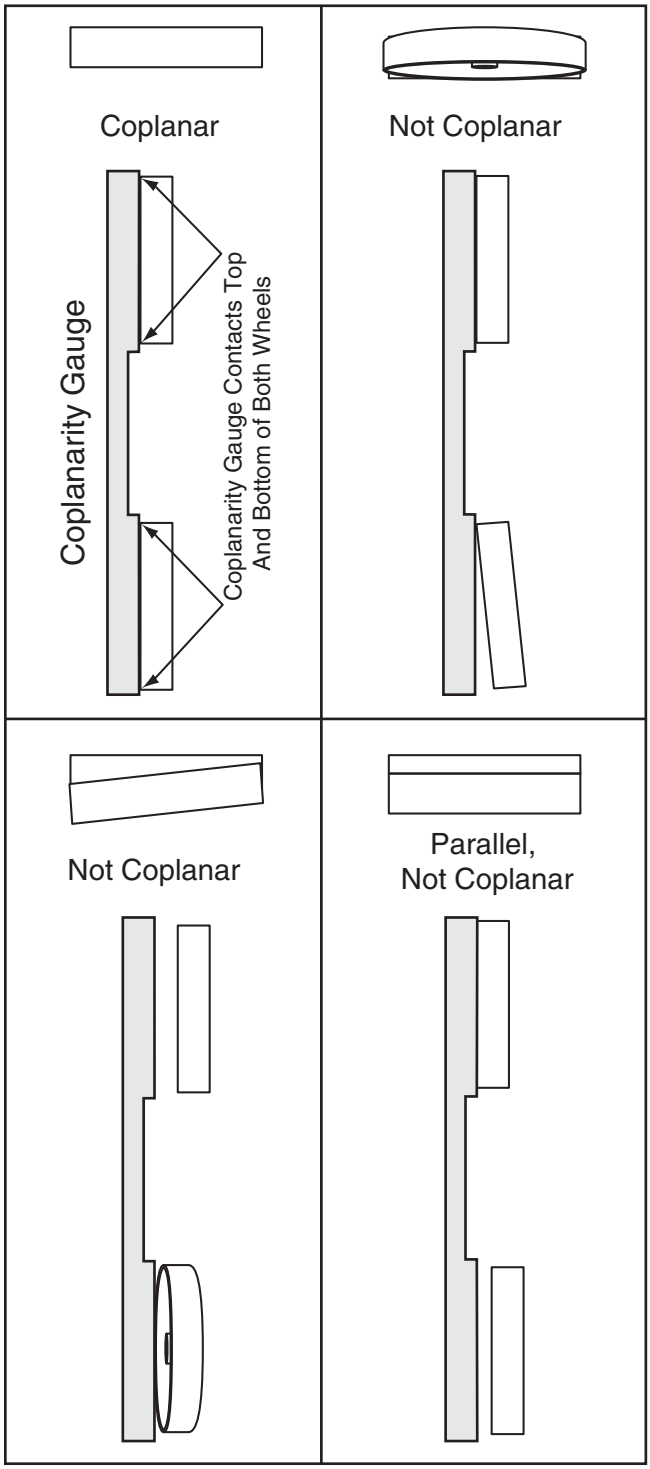


Figure 50. Wheel coplanar examples.

Checking Wheel Coplanarity

1. DISCONNECT BANDSAW FROM POWER!

2. Remove the table assembly from the machine.

3. Make sure the blade is correctly installed and tensioned.

4. Hold a self-made coplanarity gauge (see **Figure 50**) close to the center of both wheels, making sure that the gauge fully extends across the wheels as shown in **Figure 50**.

   —If the wheels are coplaner (in the same plane), the gauge will evenly touch the top and bottom of both wheels.

   —If the wheels are NOT coplanar, place the coplanarity gauge on the upper wheel first, ensuring that it touches both the top and bottom rim. Then adjust the lower wheel to be coplanar with the upper wheel.

   Note: *The upper wheel of the Model G8146Z can also be adjusted. To do this, refer to the detailed instructions later in this subsection.*

Adjusting Lower Wheel

1. Check the coplanarity of the wheels as outlined above, then identify the four wheel adjusting assemblies of the bottom wheel (see **Figure 51**).

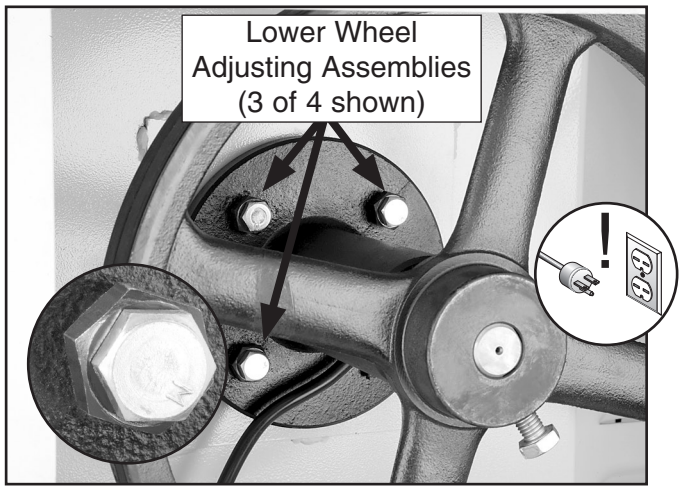


Figure 51. Lower wheel adjusting assemblies.

   Note: *The lower wheel adjusting assemblies have a locking hex bolt threaded into an adjusting sleeve.*

2. Use a 17mm wrench to loosen the locking hex bolts.

3. Use a 21mm wrench to loosen or tighten the adjusting sleeves as necessary to bring the lower wheel coplanar with the upper wheel.

   Example 1: *If the top of the lower wheel leans to far forward (see the top right example in **Figure 50**), thread the top two adjusting sleeves out.*

   Example 2: *Alternately, if the lower wheel is parallel to the upper wheel but behind the plane of the upper wheel (see bottom right example in **Figure 50**), then thread all four adjusting sleeves in.*

4. Re-tighten the locking hex bolts to secure the settings of the adjusting sleeves.

5. Re-check the wheels for alignment and repeat the steps above if necessary.

6. Re-check the pulley alignment and V-belt tension (**Page 41**).

7. Re-install the table and check its alignment with the blade (**Page 44**).

Adjusting Upper Wheel (Model G8146Z only)

The Model G8146Z upper wheel adjusting fasteners consist of four locking hex bolts and four adjusting hex bolts with jam nuts (see **Figure 52**).

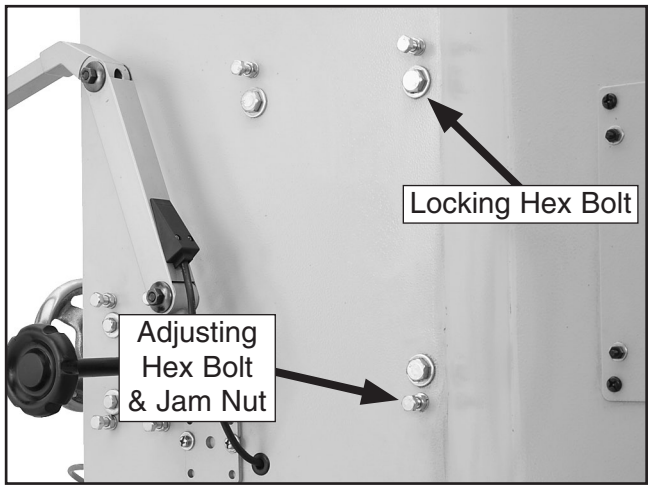


Figure 52. Model G8146Z upper wheel adjusting fasteners.

To adjust the Model G8146Z upper wheel:

1. Complete all steps in the **Checking Wheel Coplanarity** subsection on **Page 43**.

2. Use a 17mm wrench to loosen the locking hex bolts and a 12 mm wrench to loosen the jam nuts on the upper wheel (see **Figure 52**).

   Note: *Threading an adjusting hex bolt in will force that part of the wheel forward. Conversely, threading an adjusting hex bolt out will pull that wheel section to the rear of the machine when the locking hex bolt is re-tightened.*

3. Re-tighten the locking hex bolts and jam nuts to secure the settings of the adjusting hex bolts.

4. Re-check the wheels for alignment and repeat the steps above if necessary.

5. Re-install the table and check its alignment with the blade.

Aligning Table To Blade

To ensure the angle accuracy of the cut, the table must be 90° to the blade from front-to-back and side-to-side. If the table is not square to the blade, it needs to be adjusted.

To adjust the table square to the blade:

1. DISCONNECT BANDSAW FROM POWER!

2. Make sure the wheels are coplanar (**Page 43**) and the blade is properly tensioned (**Page 29**).

3. Set the angle of the table to "0".

4. Use a square to check table alignment with the blade, as shown in **Figure 53**.

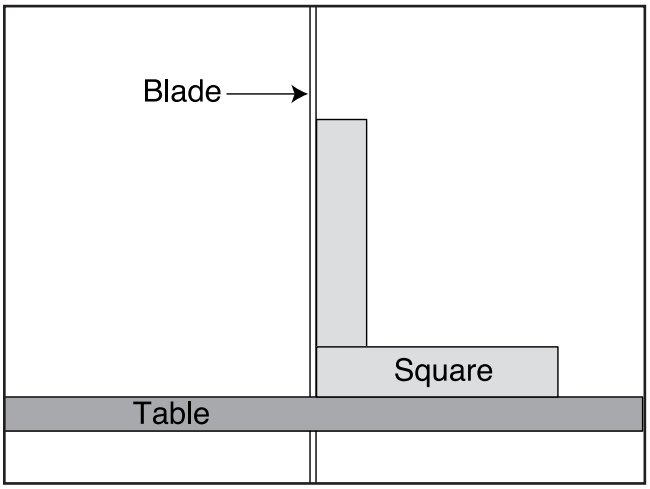


Figure 53. Checking table alignment with the blade.

5. Use a 12mm wrench to loosen the table mounting hex bolts (see **Figure 54**).

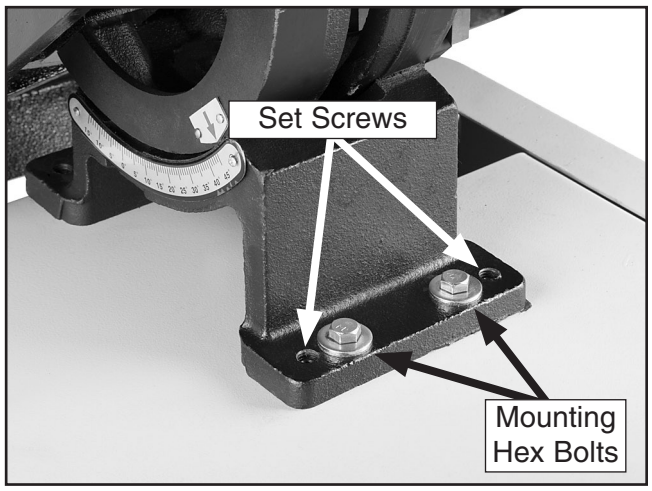


Figure 54. Table mounting hex bolts and adjusting set screws.

6. Use a 5mm hex wrench to adjust the set screws so that the table is square to the blade front-to-back and side-to-side.

   Note: *Make small adjustments to the set screws, then recheck the alignment of the table with the blade.*

7. When the table is 90° to the blade from front-to-back and side-to-side, re-tighten the mounting hex bolts to secure the table alignment.

Blade Guides/ Support

The inserts in the face of the blade guides and the blade support are made of tungsten steel.

With use, the front of the blade guide inserts will wear and it may become difficult to properly adjust the guides to the blade (refer to **Adjusting Blade Guides** on **Page 31**). If this is the case, swap and turn over the blade guides so that the inserts are reversed relative to the blade (see **Figure 55**).

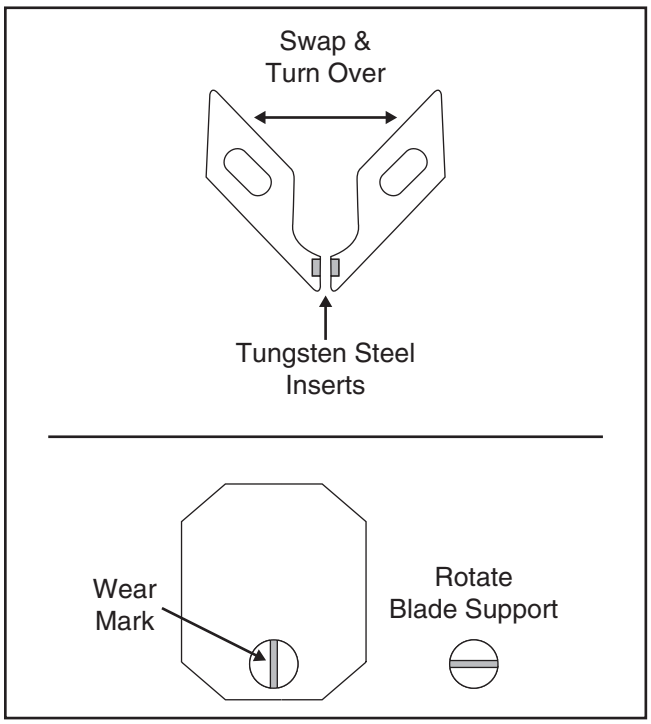
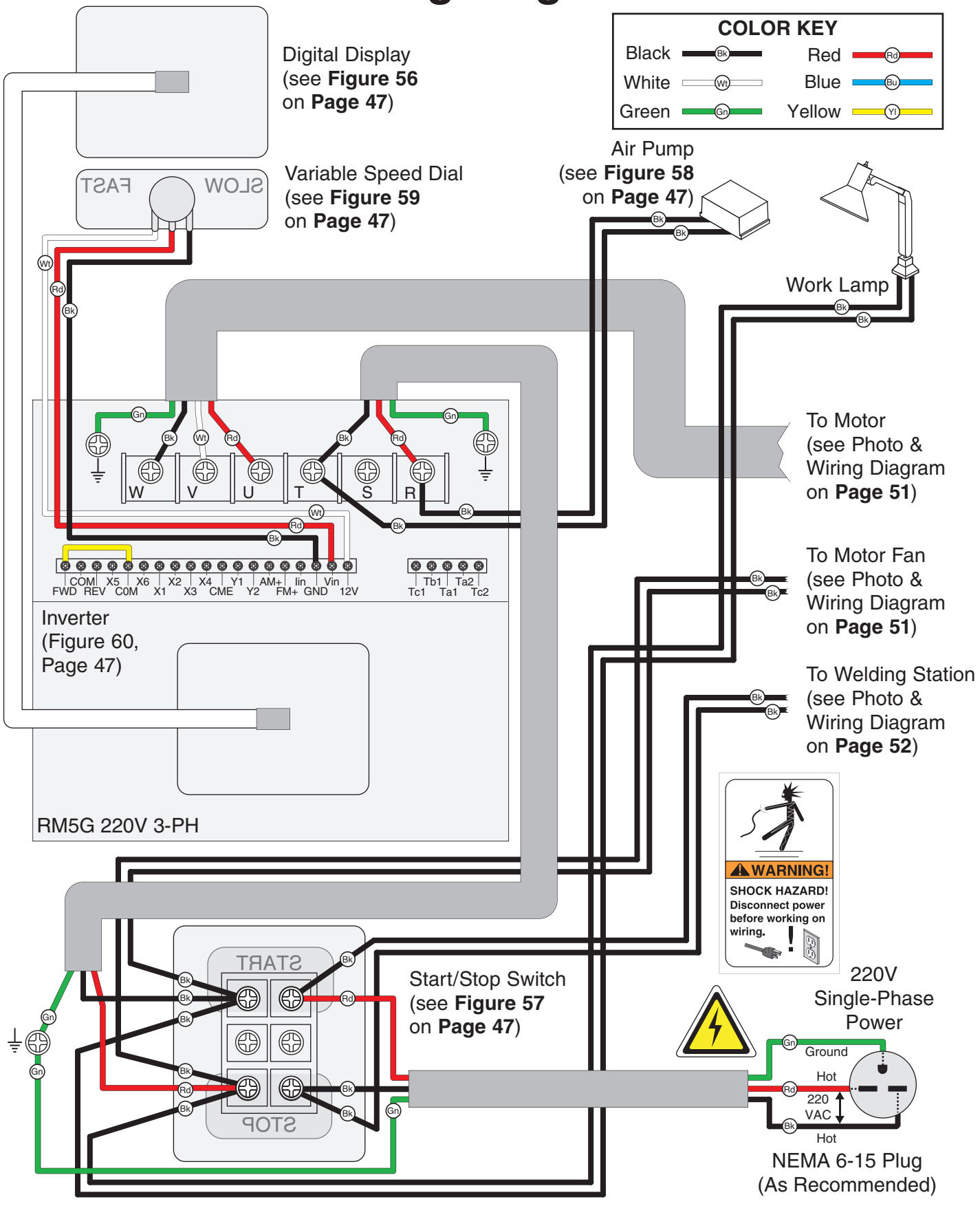


Figure 55. Blade guide and support orientation.

As the blade is deflected back into the blade support during operation, a groove will eventually wear into the blade support. As this groove becomes deeper, it can affect the accuracy of the cut. When this happens, loosen the blade support cap screw and rotate the blade support, as shown in **Figure 55**.

Note: *Make sure to re-adjust the blade guides and support as directed in **Adjusting Blade Guides** on **Page 31** after making these changes.*

G8144Z/G8145Z Control Panel & Inverter Wiring Diagram



G8144Z/G8145Z Electrical Components

Figure 56. Digital display wiring (see wiring diagram on **Page 46**).

Figure 58. Air pump wiring (see wiring diagram on **Page 46**).

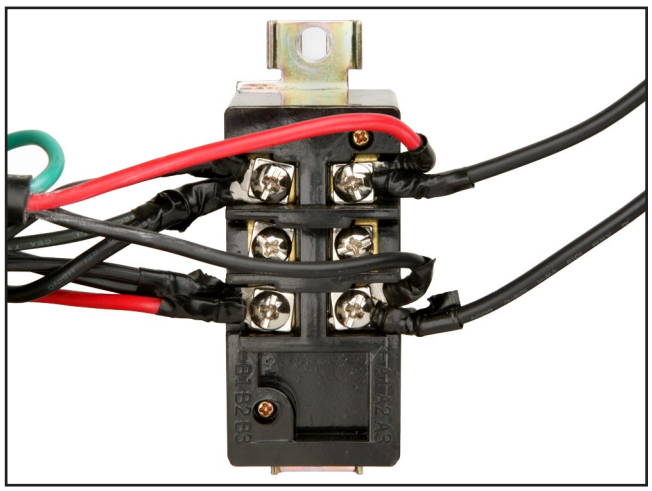


Figure 57. Start/Stop switch wiring (see wiring diagram on **Page 46**).

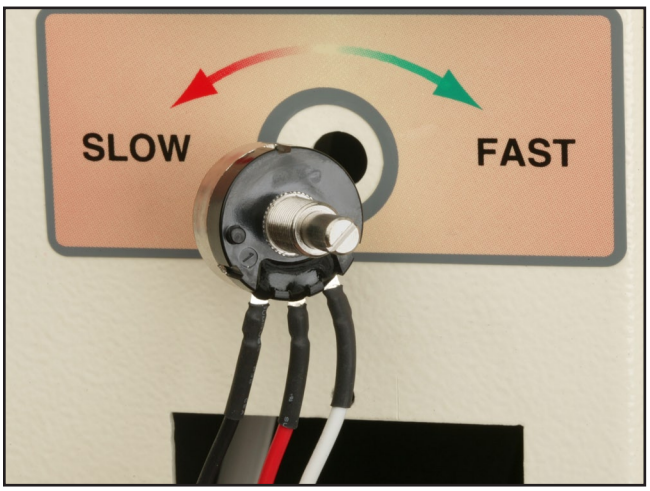


Figure 59. Variable speed dial wiring (see wiring diagram on **Page 46**).

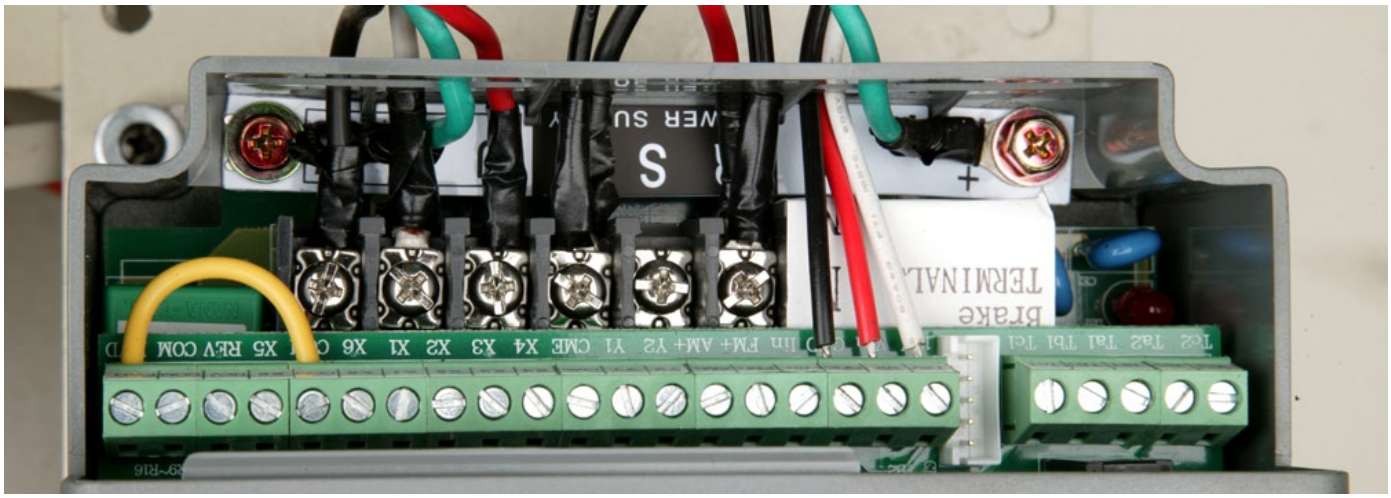
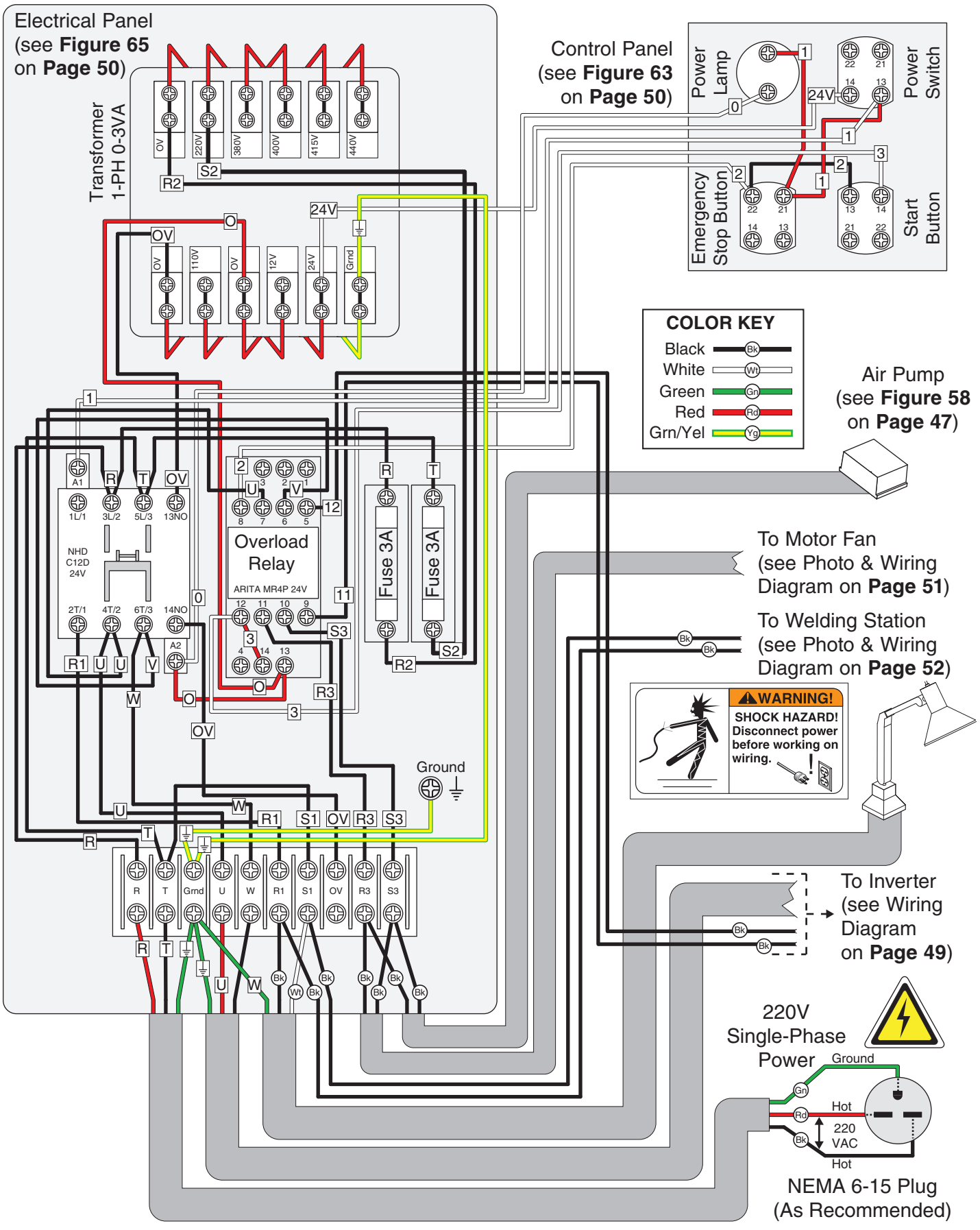


Figure 60. Inverter/controller box wiring (see wiring diagram on **Page 46**).

G8146Z Electrical & Control Wiring Diagram



G8146Z Inverter Wiring Diagram

Figure 61. Digital display wiring.

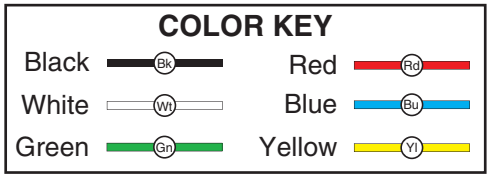


Figure 62. Variable speed dial wiring.

Inverter
(see **Figure 64** on **Page 50**)

G8146Z Electrical Components

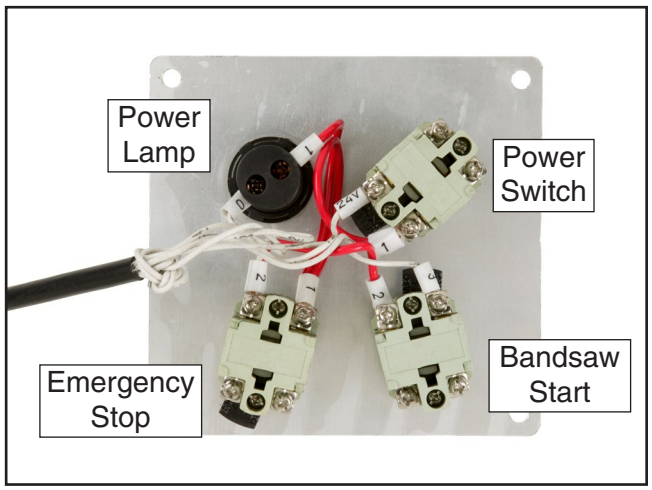


Figure 63. Control panel wiring (see wiring diagram on **Page 48**).

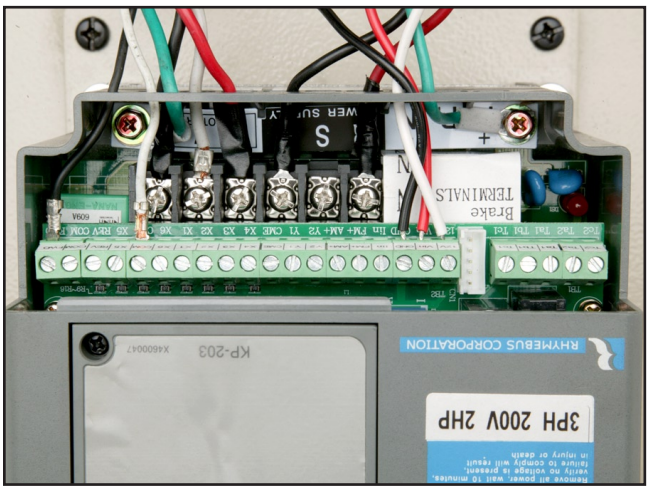


Figure 64. Inverter/Controller box wiring (see wiring diagram on **Page 49**).

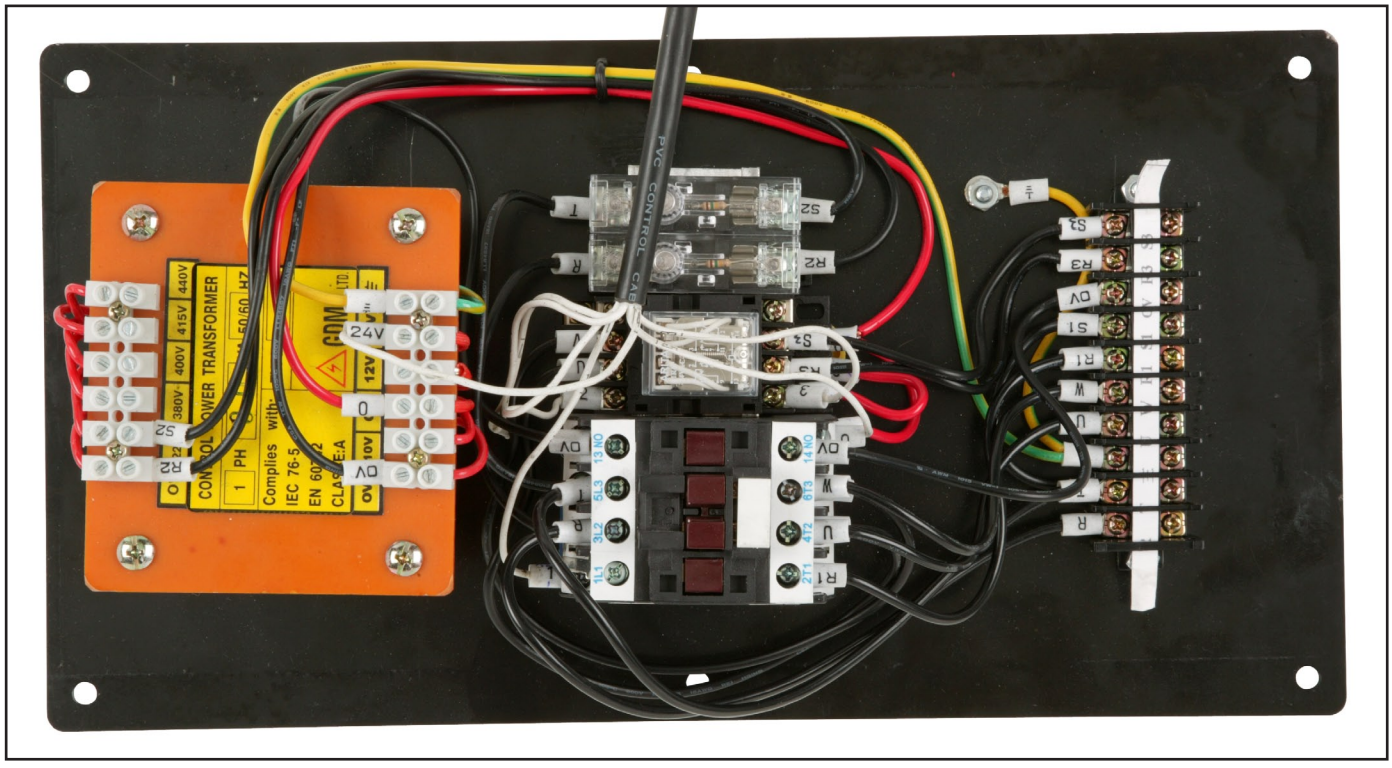
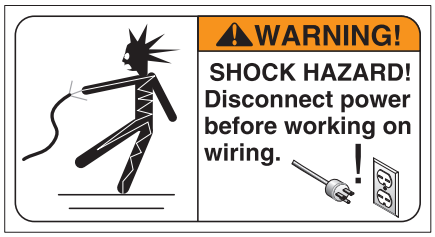


Figure 65. Main electrical wiring (see wiring diagram on **Page 48**).

Motor Wiring Diagram

COLOR KEY

Black	Bk
White	Wt
Green	Gn
Red	Rd



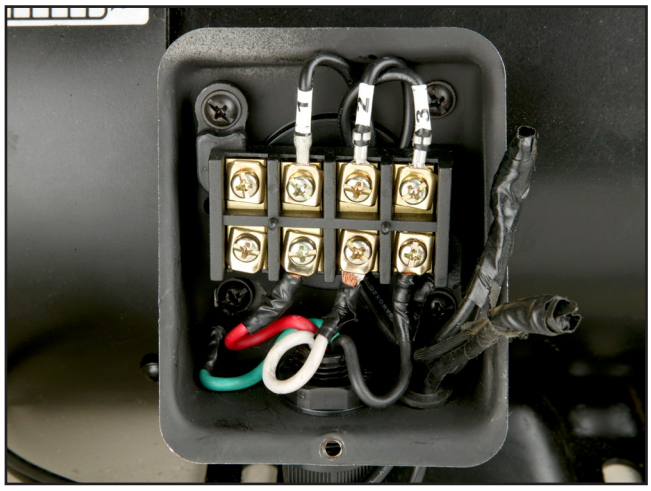
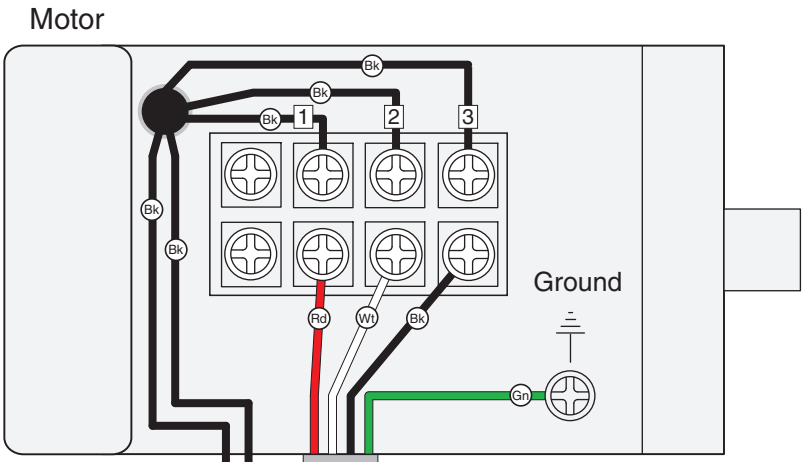


Figure 66. Motor junction box wiring.



G8144Z/G8145Z: To Control Panel & Inverter (see **Page 46**)

G8146Z: To Inverter (see **Page 49**) & Electrical Panel (see **Page 48**)

NOTICE

The motor wiring shown here is current at the time of printing, but it may not match your machine. Always use the wiring diagram inside the motor junction box.

MOTOR DIRECTION

NOTICE

If motor rotates in opposite direction, swap any two power source wires at the incoming terminals.

Welding Station Wiring Diagram

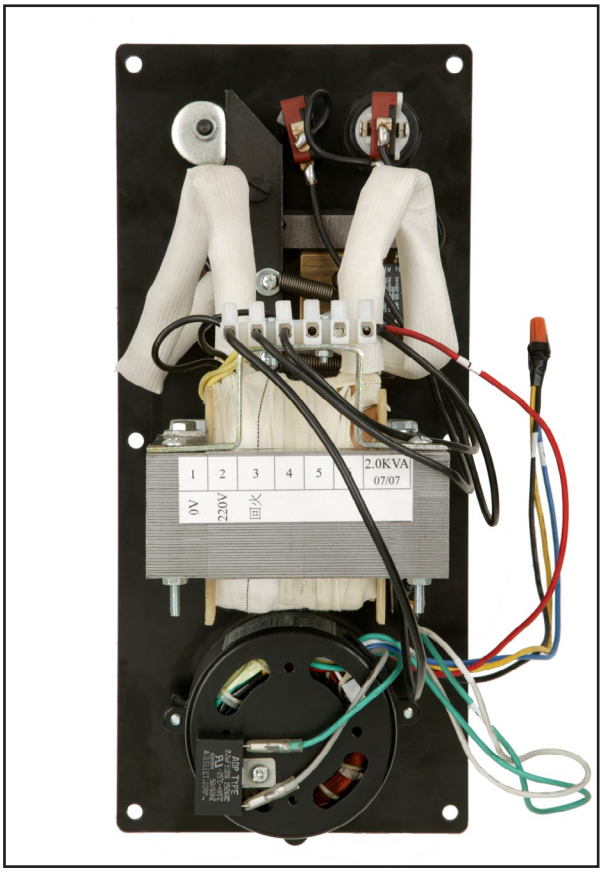
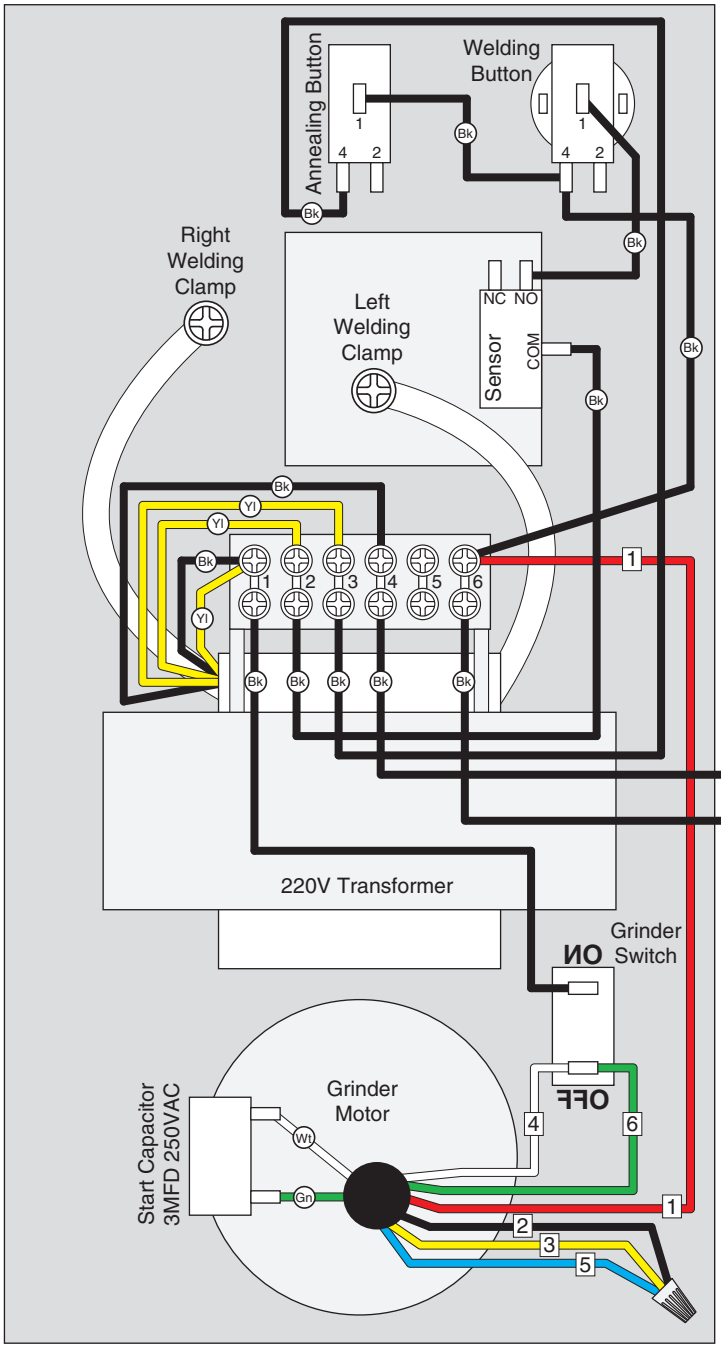


Figure 67. Welding station wiring.



G8144Z/G8145Z:
To Start/Stop Switch
(see **Page 46**)

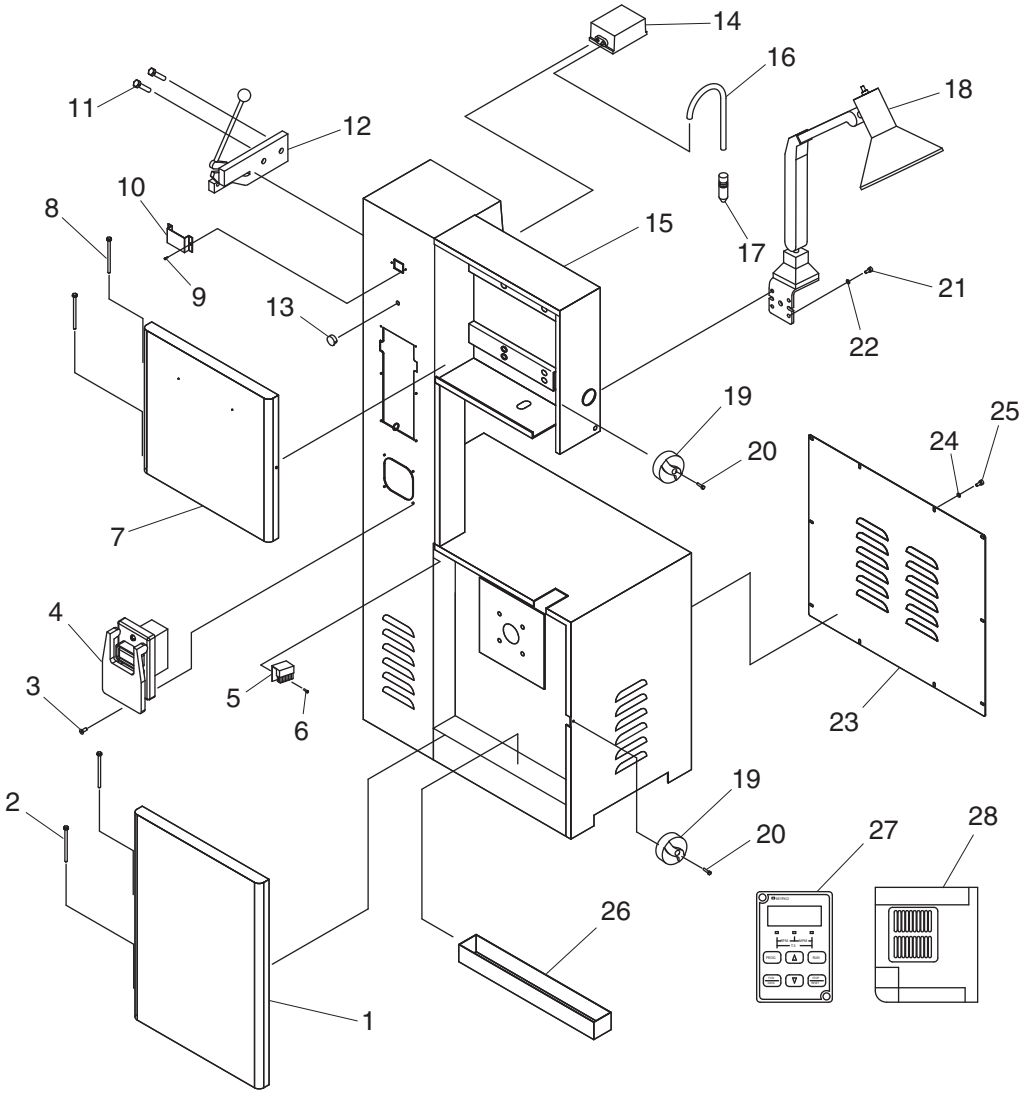
G8146Z:
To Electrical Panel
(see **Page 48**)

COLOR KEY

Black	Bk	Red	Rd
White	Wt	Blue	Bu
Green	Gn	Yellow	Yl

SECTION 8: PARTS

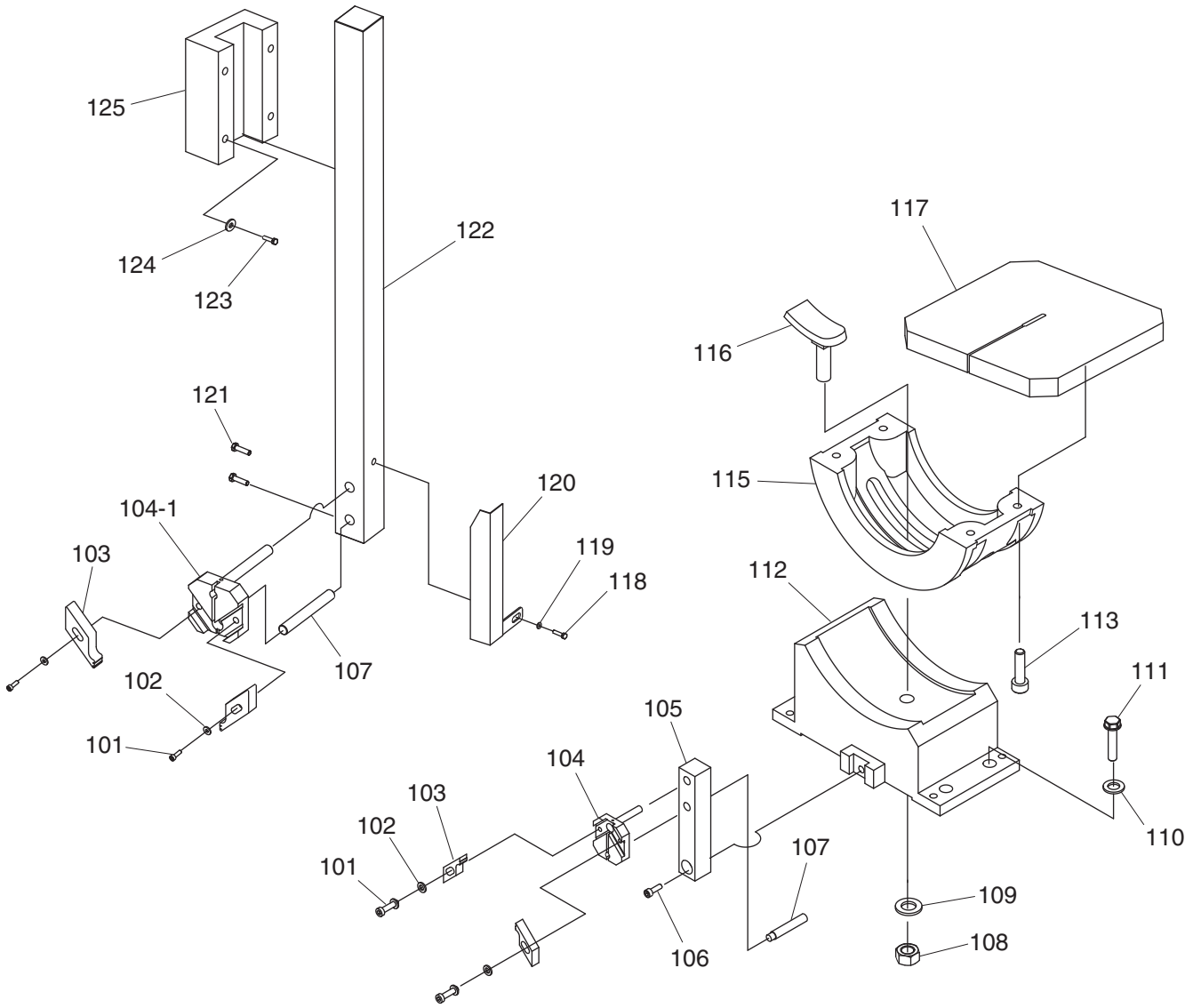
G8144Z Cabinet Breakdown & Parts List



REF	PART #	DESCRIPTION
1	P8144Z001	WHEEL DOOR LOWER
2	P8144Z002	HINGE PIN LOWER
3	PS05M	PHLP HD SCR M5-.8 X 8
4	P8144Z004	ON/OFF SWITCH W/PADDLE
5	P8144Z005	BLADE CLEANING BRUSH
6	PS47M	PHLP HD SCR M6-1 X 25
7	P8144Z007	WHEEL DOOR UPPER
8	P8144Z002	HINGE PIN UPPER
9	PS05M	PHLP HD SCR M5-.8 X 8
10	P8144Z010	DIGITIAL DISPLAY BRACKET
11	PSB11M	CAP SCREW M8-1.25 X 16
12	P8144Z012	BLADE SHEAR
13	P8144Z013	VARIABLE SPEED DIAL
14	P8144Z014	AIR PUMP

REF	PART #	DESCRIPTION
15	P8144Z015	BANDSAW CABINET
16	P8144Z016	AIR HOSE 4X6MM
17	P8144Z017	AIR NOZZLE
18	P8144Z018	WORK LAMP 220V
19	P8144Z019	DOOR KNOB
20	PS47M	PHLP HD SCR M6-1 X 25
21	PSB28M	CAP SCREW M6-1 X 15
22	PW03M	FLAT WASHER 6MM
23	P8144Z023	MOTOR ACCESS PANEL
24	PW03M	FLAT WASHER 6MM
25	PS68M	PHLP HD SCR M6-1 X 10
26	P8144Z026	CHIP PAN
27	P8144Z027	DIGITAL DISPLAY
28	P8144Z028	INVERTER RM5G 1HP 220V 3PH

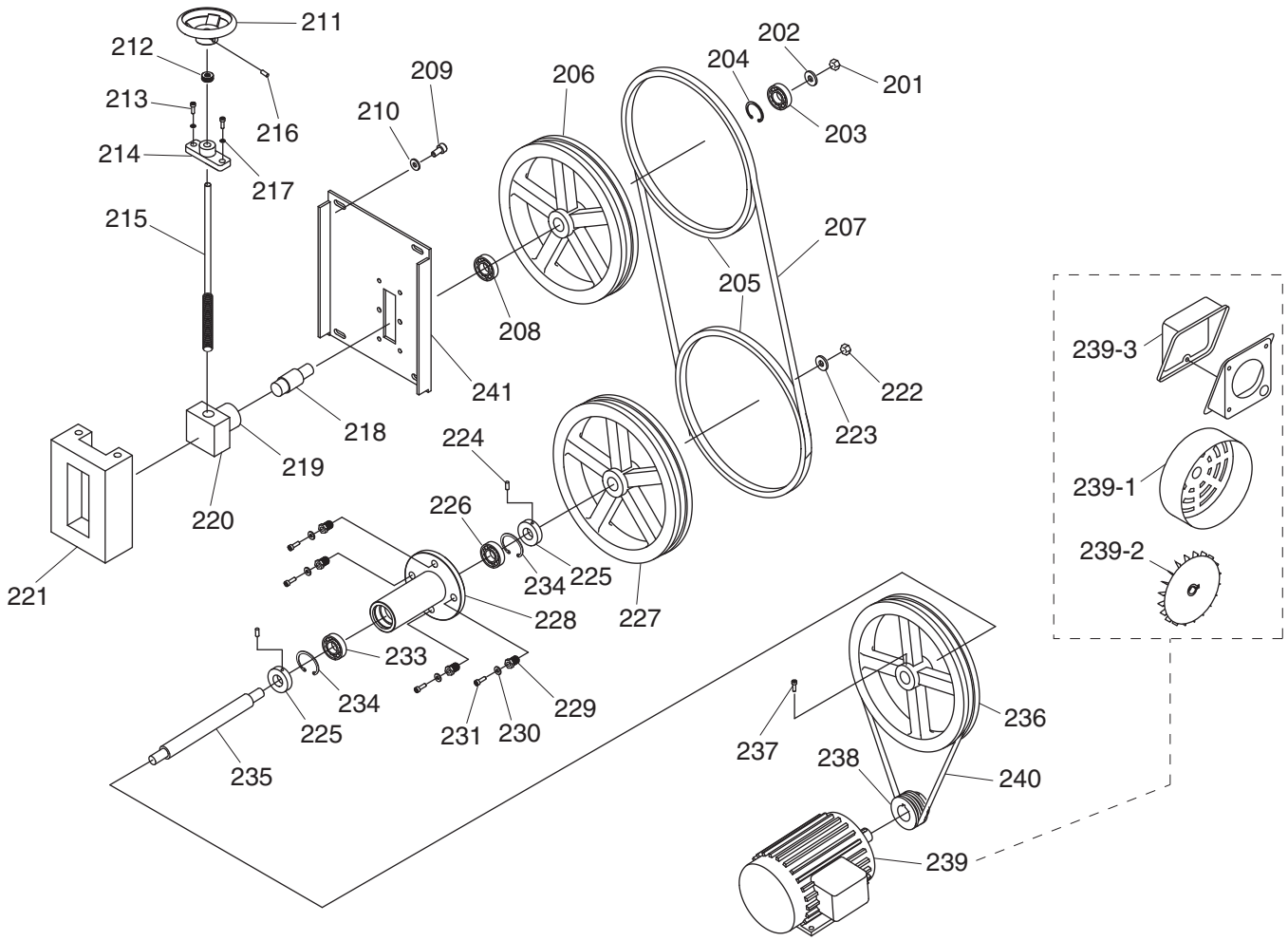
G8144Z Table & Guides Breakdown & Parts List



REF	PART #	DESCRIPTION
101	PSB15M	CAP SCREW M5-.8 X 20
102	PW02M	FLAT WASHER 5MM
103	P8144Z103	BLADE GUIDE
104	P8144Z104	BLADE GUIDE BRACKET LOWER
104-1	P8144Z104-1	BLADE GUIDE BRACKET UPPER
105	P8144Z105	GUIDE POST LOWER
106	PSB64M	CAP SCREW M10-1.5 X 25
107	P8144Z107	BLADE SUPPORT
108	PN04	HEX NUT 5/8-11
109	PW14	FLAT WASHER 5/8
110	PW01M	FLAT WASHER 8MM
111	PB26M	HEX BOLT M8-1.25 X 30
112	P8144Z112	TRUNNION BASE

REF	PART #	DESCRIPTION
113	PSB31M	CAP SCREW M8-1.25 X 25
115	P8144Z115	TRUNNION
116	P8144Z116	TABLE TILT LOCK 5/8-11 X 2
117	P8144Z117	TABLE
118	PSB11M	CAP SCREW M8-1.25 X 16
119	PW01M	FLAT WASHER 8MM
120	P8144Z120	BLADE GUARD
121	PSB11M	CAP SCREW M8-1.25 X 16
122	P8144Z122	GUIDE POST UPPER
123	PSB13M	CAP SCREW M8-1.25 X 30
124	PW01M	FLAT WASHER 8MM
125	P8144Z125	GUIDE POST WAY

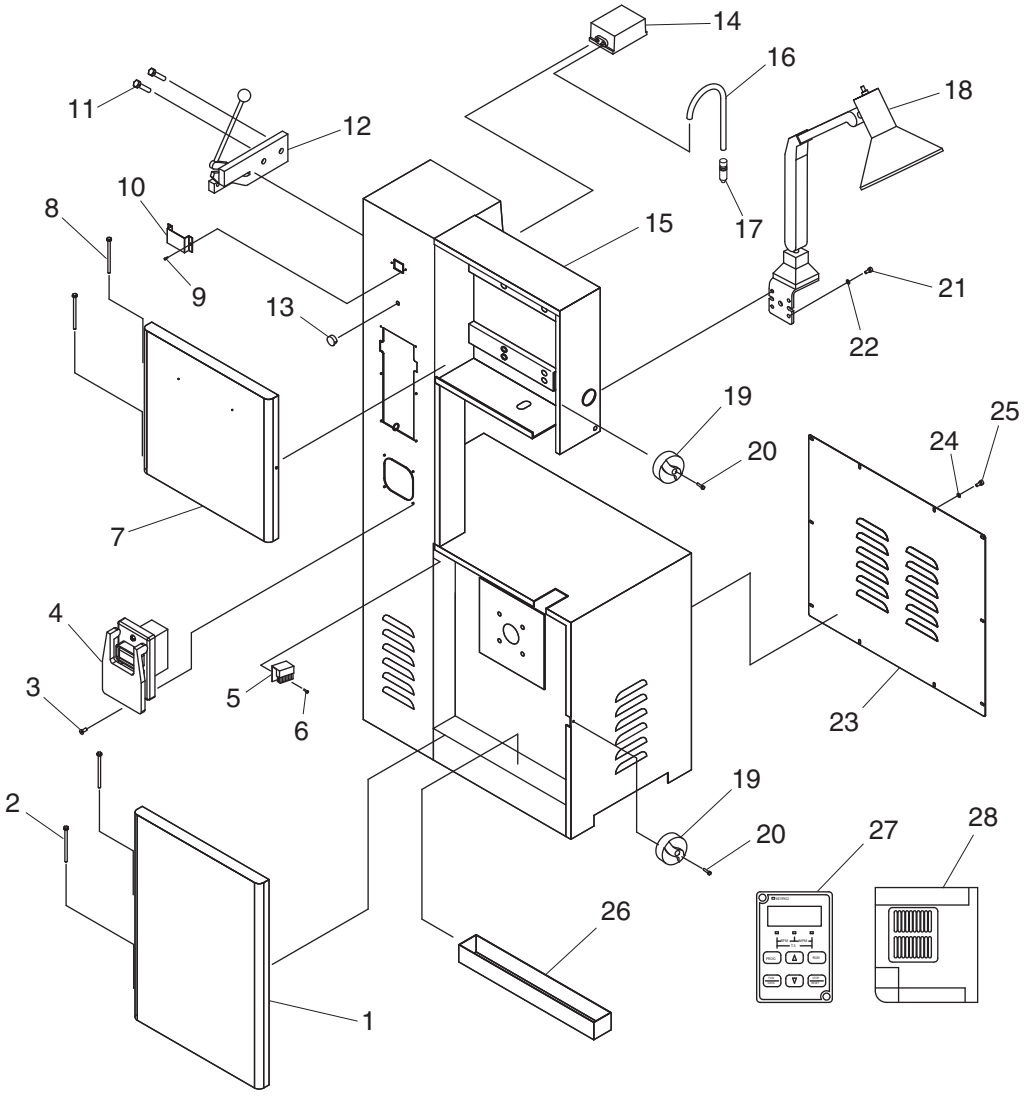
G8144Z Drive System Breakdown



REF	PART #	DESCRIPTION
201	PN01	HEX NUT 1/2-20
202	PLW07	LOCK WASHER 1/2
203	P6203	BALL BEARING 6203ZZ
204	PR21M	INT RETAINING RING 35MM
205	P8144Z205	WHEEL TIRE
206	P8144Z206	WHEEL UPPER
207	P8144Z207	BANDSAW BLADE 1/4"W STANDARD
208	P6203	BALL BEARING 6203ZZ
209	PB02M	HEX BOLT M6-1 X 12
210	PW03M	FLAT WASHER 6MM
211	P8144Z211	BLADE TENSIONING HANDWHEEL
212	P8144Z212	BUSHING
213	PSB13M	CAP SCREW M8-1.25 X 30
214	P8144Z214	LEADSCREW BRACKET
215	P8144Z215	LEADSCREW 3/4-6 X 7
216	PSS09M	SET SCREW M8-1.25 X 20
217	PLW04M	LOCK WASHER 8MM
218	P8144Z218	UPPER WHEEL SHAFT
219	P8144Z219	BUSHING
220	P8144Z220	LEADSCREW NUT 3/4-6
221	P8144Z221	TENSIONING WAY
222	PN09	HEX NUT 5/8-18

REF	PART #	DESCRIPTION
223	PLW06	LOCK WASHER 5/8
224	PSS20M	SET SCREW M8-1.25 X 8
225	P8144Z225	COLLAR
226	P6203	BALL BEARING 6203ZZ
227	P8144Z227	WHEEL LOWER
228	P8144Z228	BEARING HOUSING
229	P8144Z229	SPECIAL SCREW 3/4-16
230	PLW06M	LOCK WASHER 10MM
231	PSB143M	CAP SCREW M10-1.5 X 50
233	P6205	BALL BEARING 6205ZZ
234	PR26M	INT RETAINING RING 52MM
235	P8144Z235	LOWER WHEEL SHAFT
236	P8144Z236	WHEEL PULLEY
237	PSB36M	CAP SCREW M12-1.75 X 25
238	P8144Z238	MOTOR PULLEY
239	P8144Z239	MOTOR 1HP 220V 3PH
239-1	P8144Z239-1	MOTOR FAN COVER
239-2	P8144Z239-2	MOTOR FAN
239-3	P8144Z239-3	MOTOR WIRING JUNCTION BOX
240	PVA57	V-BELT A-57 4L570
241	P8144Z241	TENSIONING PANEL

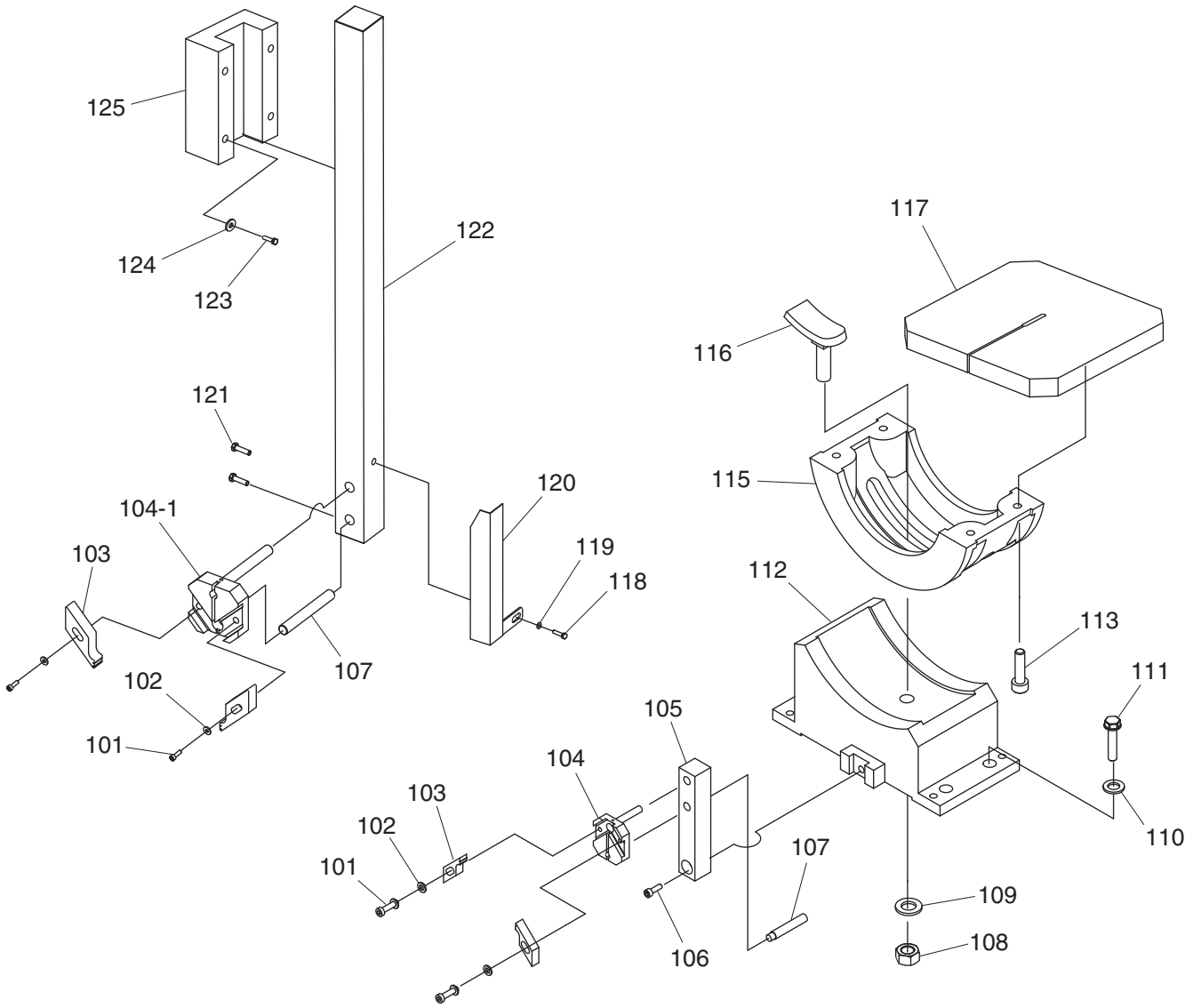
G8145Z Cabinet Breakdown & Parts List



REF	PART #	DESCRIPTION
1	P8145Z001	WHEEL DOOR LOWER
2	P8144Z002	HINGE PIN LOWER
3	PS05M	PHLP HD SCR M5-.8 X 8
4	P8145Z004	ON/OFF SWITCH W/PADDLE
5	P8144Z005	BLADE CLEANING BRUSH
6	PS47M	PHLP HD SCR M6-1 X 25
7	P8145Z007	WHEEL DOOR UPPER
8	P8144Z002	HINGE PIN UPPER
9	PS05M	PHLP HD SCR M5-.8 X 8
10	P8144Z010	DIGITIAL DISPLAY BRACKET
11	PSB11M	CAP SCREW M8-1.25 X 16
12	P8144Z012	BLADE SHEAR
13	P8144Z013	VARIABLE SPEED DIAL
14	P8144Z014	AIR PUMP

REF	PART #	DESCRIPTION
15	P8145Z015	BANDSAW CABINET
16	P8144Z016	AIR HOSE 4X6MM
17	P8144Z017	AIR NOZZLE
18	P8144Z018	WORK LAMP 220V
19	P8144Z019	DOOR KNOB
20	PS47M	PHLP HD SCR M6-1 X 25
21	PSB28M	CAP SCREW M6-1 X 15
22	PW03M	FLAT WASHER 6MM
23	P8145Z023	MOTOR ACCESS PANEL
24	PW03M	FLAT WASHER 6MM
25	PS68M	PHLP HD SCR M6-1 X 10
26	P8145Z026	CHIP PAN
27	P8144Z027	DIGITAL DISPLAY
28	P8145Z028	INVERTER RM5G 1-1/2HP 220V 3PH

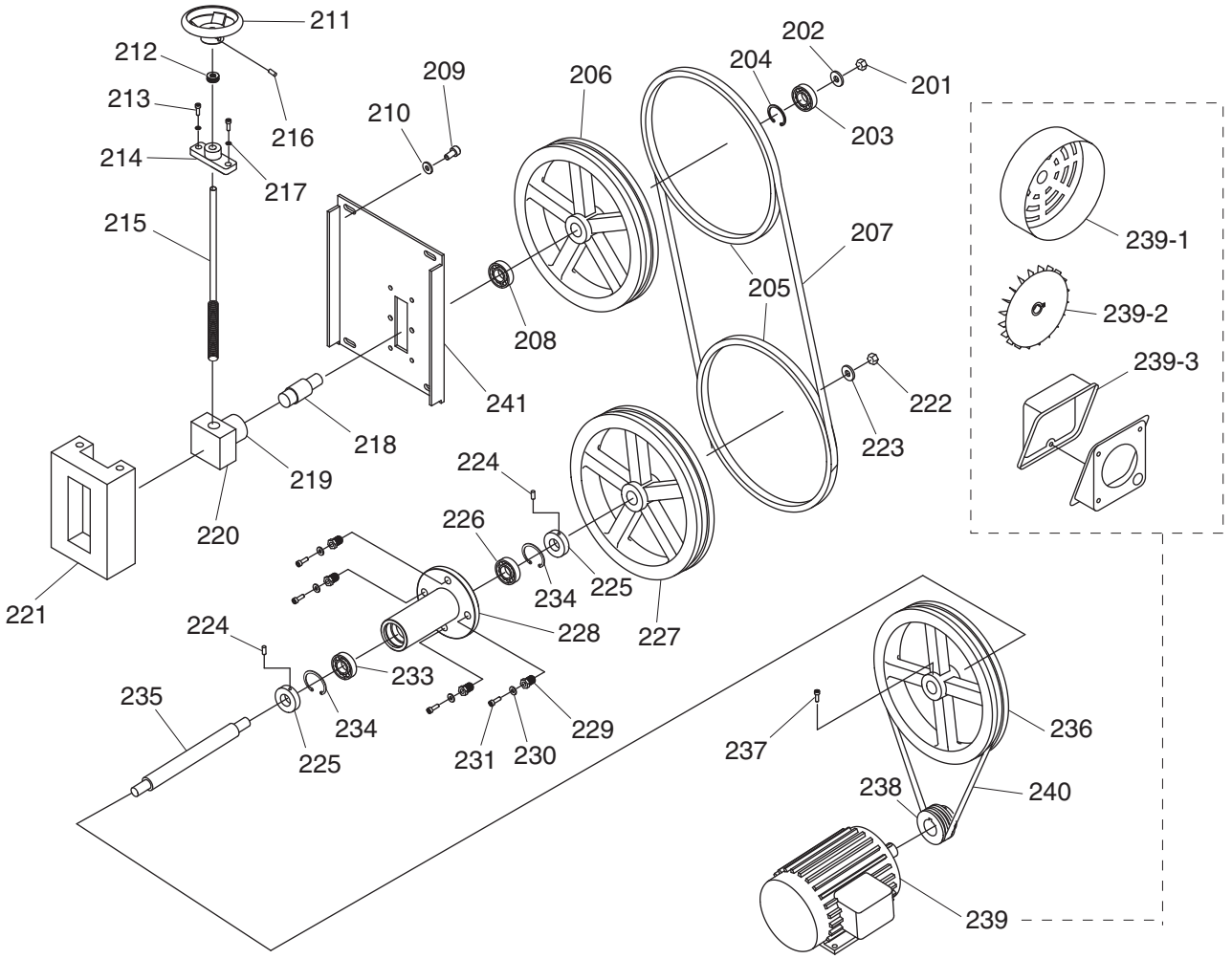
G8145Z Table & Guides Breakdown & Parts List



REF	PART #	DESCRIPTION
101	PSB15M	CAP SCREW M5-.8 X 20
102	PW02M	FLAT WASHER 5MM
103	P8144Z103	BLADE GUIDE
104	P8144Z104	BLADE GUIDE BRACKET LOWER
104-1	P8144Z104-1	BLADE GUIDE BRACKET UPPER
105	P8144Z105	GUIDE POST LOWER
106	PSB64M	CAP SCREW M10-1.5 X 25
107	P8145Z107	BLADE SUPPORT
108	PN04	HEX NUT 5/8-11
109	PLW06	LOCK WASHER 5/8
110	PW01M	FLAT WASHER 8MM
111	PB26M	HEX BOLT M8-1.25 X 30
112	P8144Z112	TRUNNION BASE

REF	PART #	DESCRIPTION
113	PSB31M	CAP SCREW M8-1.25 X 25
115	P8144Z115	TRUNNION
116	P8144Z116	TABLE TILT LOCK 5/8-11 X 2
117	P8145Z117	TABLE
118	PSB11M	CAP SCREW M8-1.25 X 16
119	PW01M	FLAT WASHER 8MM
120	P8144Z120	BLADE GUARD
121	PSB11M	CAP SCREW M8-1.25 X 16
122	P8145Z122	GUIDE POST UPPER
123	PSB13M	CAP SCREW M8-1.25 X 30
124	PW01M	FLAT WASHER 8MM
125	P8144Z125	GUIDE POST WAY

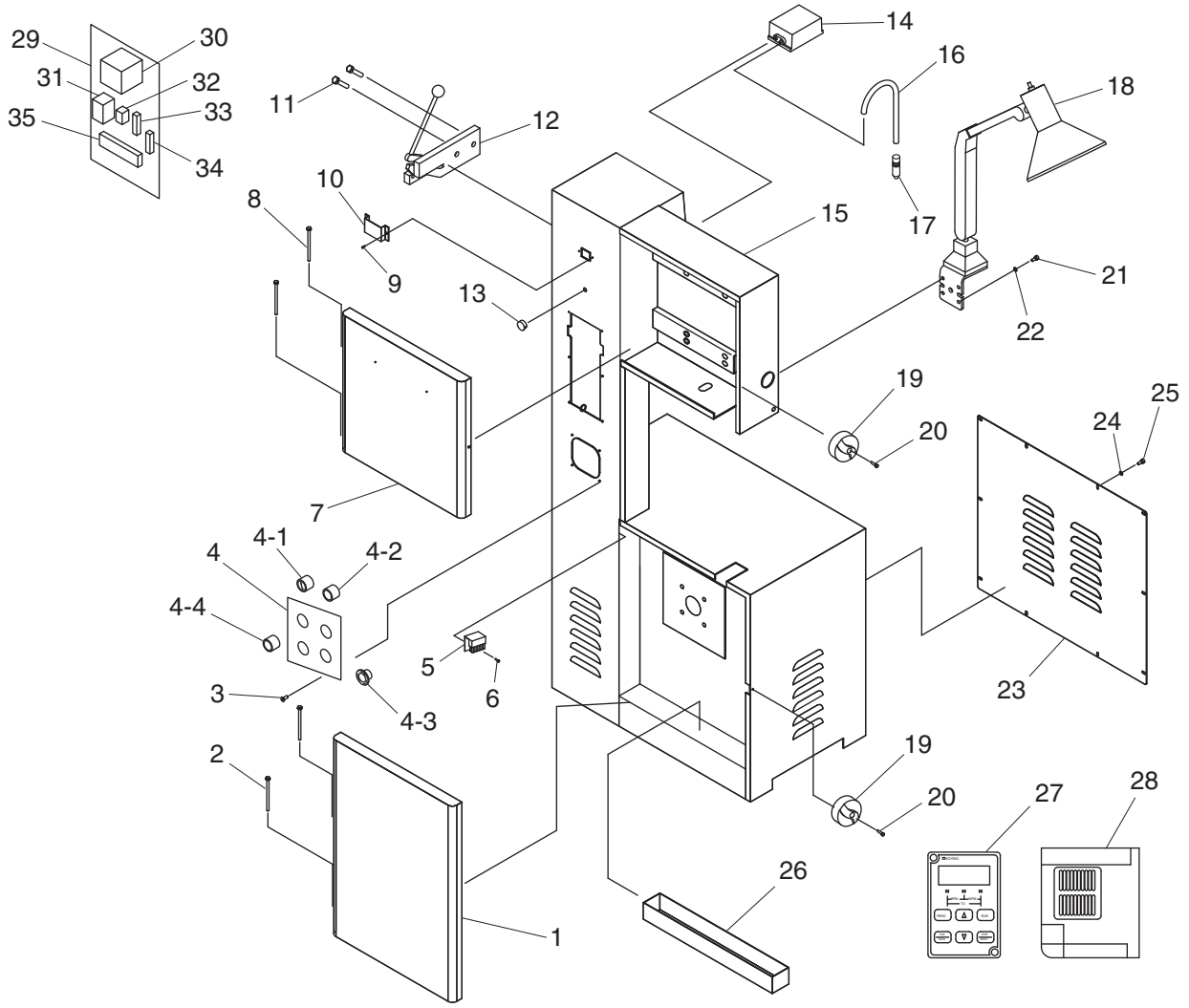
G8145Z Drive System Breakdown



REF	PART #	DESCRIPTION
201	PN01	HEX NUT 1/2-20
202	PLW07	LOCK WASHER 1/2
203	P6203	BALL BEARING 6203ZZ
204	PR23M	INT RETAINING RING 40MM
205	P8145Z205	WHEEL TIRE
206	P8145Z206	WHEEL UPPER
207	P8145Z207	BANDSAW BLADE 1/4"W STANDARD
208	P6203	BALL BEARING 6203ZZ
209	PB02M	HEX BOLT M6-1 X 12
210	PW03M	FLAT WASHER 6MM
211	P8144Z211	BLADE TENSIONING HANDWHEEL
212	P8144Z212	BUSHING
213	PSB13M	CAP SCREW M8-1.25 X 30
214	P8144Z214	LEADSCREW BRACKET
215	P8144Z215	LEADSCREW 3/4-6 x 7
216	PSS09M	SET SCREW M8-1.25 X 20
217	PLW04M	LOCK WASHER 8MM
218	P8144Z218	UPPER WHEEL SHAFT
219	P8144Z219	BUSHING
220	P8144Z220	LEADSCREW NUT 3/4-6
221	P8144Z221	TENSIONING WAY
222	PN09	HEX NUT 5/8-18

REF	PART #	DESCRIPTION
223	PLW06	LOCK WASHER 5/8
224	PSS20M	SET SCREW M8-1.25 X 8
225	P8144Z225	COLLAR
226	P6203	BALL BEARING 6203ZZ
227	P8145Z227	WHEEL LOWER
228	P8144Z228	BEARING HOUSING
229	P8145Z229	SPECIAL SCREW 3/4-16
230	PLW06M	LOCK WASHER 10MM
231	PB73M	HEX BOLT M10-1.5 X 50
233	P6205	BALL BEARING 6205ZZ
234	PR26M	INT RETAINING RING 52MM
235	P8144Z235	LOWER WHEEL SHAFT
236	P8145Z236	WHEEL PULLEY
237	PSB36M	CAP SCREW M12-1.75 X 25
238	P8145Z238	MOTOR PULLEY
239	P8145Z239	MOTOR 1-1/2HP 220V 3PH
239-1	P8145Z239-1	MOTOR FAN COVER
239-2	P8145Z239-2	MOTOR FAN
239-3	P8145Z239-3	MOTOR WIRING JUNCTION BOX
240	PVA58	V-BELT A-58 4L580
241	P8144Z241	TENSIONING PANEL

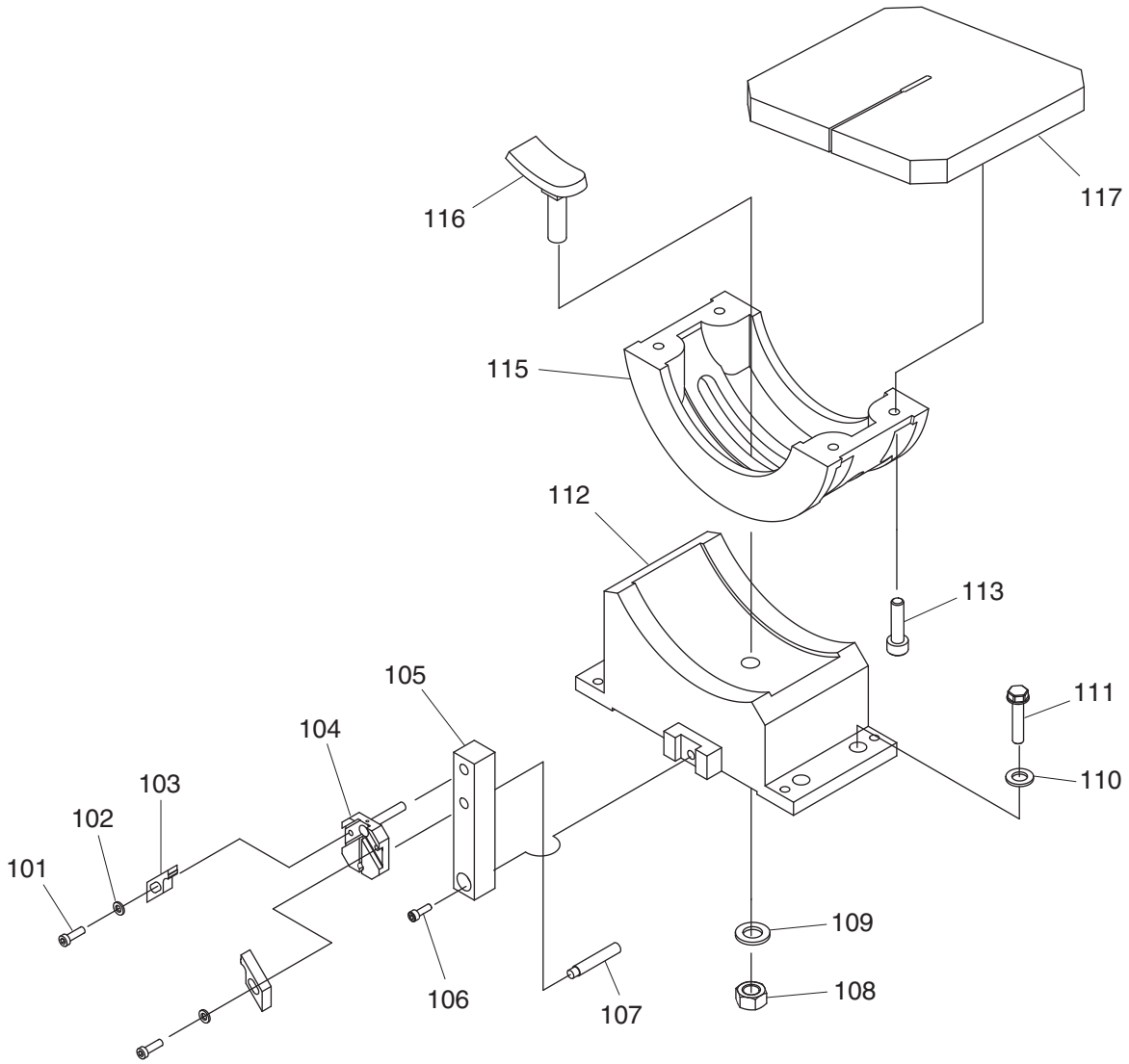
G8146Z Cabinet Breakdown & Parts List



REF	PART #	DESCRIPTION
1	P8146Z001	WHEEL DOOR LOWER
2	P8144Z002	HINGE PIN LOWER
3	PS05M	PHLP HD SCR M5-.8 X 8
4	P8146Z004	CONTROL PANEL
4-1	P8146Z004-1	POWER SWITCH W/KEY
4-2	P8146Z004-2	POWER LAMP
4-3	P8146Z004-3	EMERGENCY STOP BUTTON
4-4	P8146Z004-4	MOTOR ON BUTTON
5	P8144Z005	BLADE CLEANING BRUSH
6	PS22M	PHLP HD SCR M5-.8 X 25
7	P8146Z007	WHEEL DOOR UPPER
8	P8144Z002	HINGE PIN UPPER
9	PS05M	PHLP HD SCR M5-.8 X 8
10	P8144Z010	DIGITIAL DISPLAY BRACKET
11	PSB11M	CAP SCREW M8-1.25 X 16
12	P8144Z012	BLADE SHEAR
13	P8144Z013	VARIABLE SPEED DIAL
14	P8144Z014	AIR PUMP
15	P8146Z015	BANDSAW CABINET
16	P8144Z016	AIR HOSE 4X6MM

REF	PART #	DESCRIPTION
17	P8144Z017	AIR NOZZLE
18	P8144Z018	WORK LAMP 220V
19	P8144Z019	DOOR KNOB
20	PS47M	PHLP HD SCR M6-1 X 25
21	PSB28M	CAP SCREW M6-1 X 15
22	PW03M	FLAT WASHER 6MM
23	P8146Z023	MOTOR ACCESS PANEL
24	PW03M	FLAT WASHER 6MM
25	PS68M	PHLP HD SCR M6-1 X 10
26	P8146Z026	CHIP PAN
27	P8144Z027	DIGITAL DISPLAY
28	P8146Z028	INVERTER RM5G 2HP 220V 3PH
29	P8146Z029	CONTROL PANEL
30	P8146Z030	TRANSFORMER 1PH 0-3VA
31	P8146Z031	CONTACTOR NHD C-12D 24V
32	P8146Z032	OL RELAY ARITA MR4P 24V 3-5A
33	P8146Z033	FUSE HOLDER
34	P8146Z034	FUSE 3A
35	P8146Z035	WIRING BLOCK 10-POST

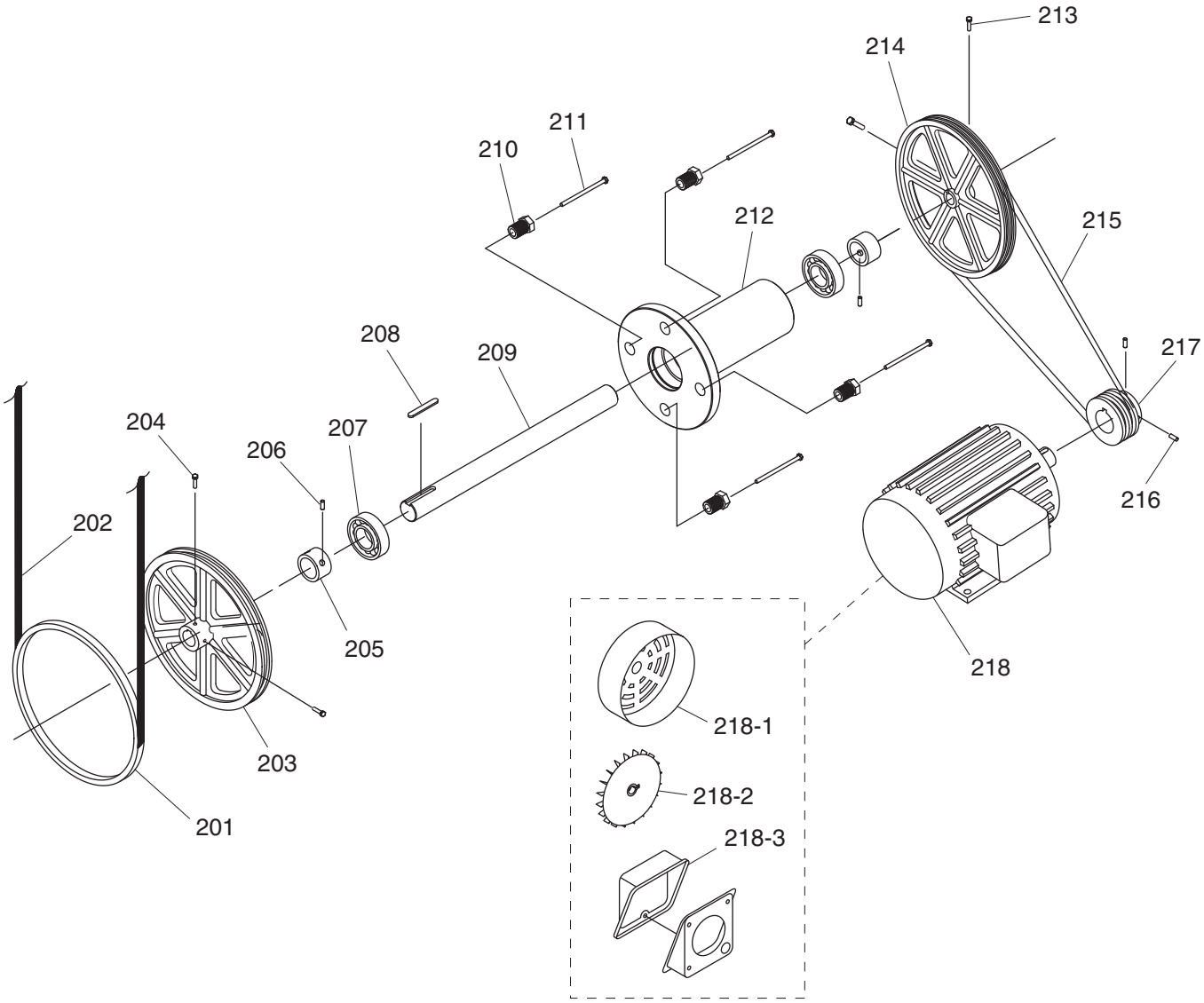
G8146Z Table & Lower Guide Breakdown & Parts List



REF	PART #	DESCRIPTION
101	PSB02M	CAP SCREW M6-1 X 20
102	PLW03M	LOCK WASHER 6MM
103	P8144Z103	BLADE GUIDE
104	P8144Z104	BLADE GUIDE BRACKET LOWER
105	P8146Z105	GUIDE POST LOWER
106	PSB06M	CAP SCREW M6-1 X 25
107	P8144Z107	BLADE SUPPORT
108	PN04	HEX NUT 5/8-11

REF	PART #	DESCRIPTION
109	PLW06	LOCK WASHER 5/8
110	PW01M	FLAT WASHER 8MM
111	PSB14M	CAP SCREW M8-1.25 X 20
112	P8144Z112	TRUNNION BASE
113	PSB14M	CAP SCREW M8-1.25 X 20
115	P8144Z115	TRUNNION
116	P8144Z116	TABLE TILT LOCK 5/8-11 X 2
117	P8146Z117	TABLE

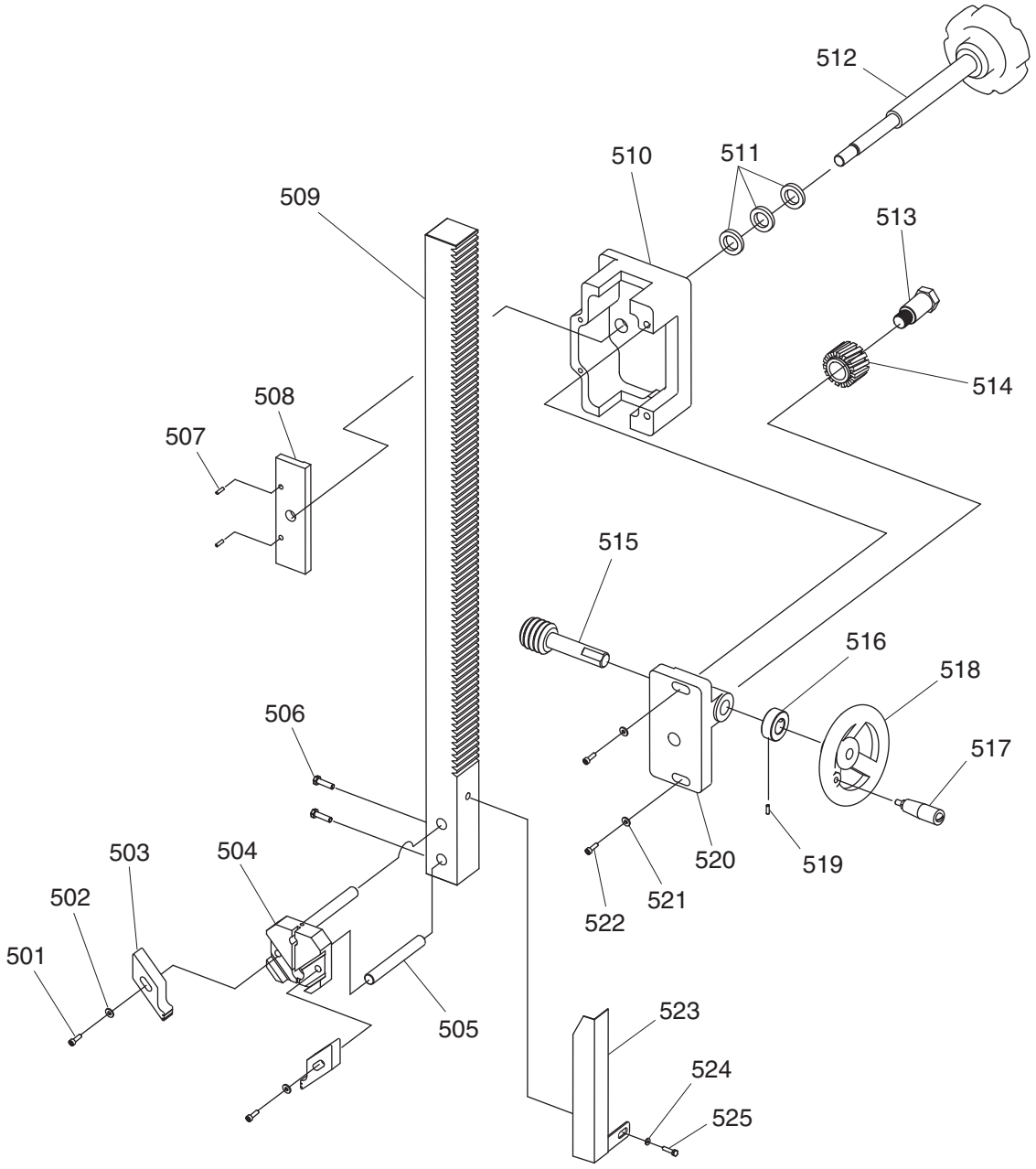
G8146Z Motor & Lower Wheel Breakdown & Parts List



REF	PART #	DESCRIPTION
201	P8146Z201	WHEEL TIRE
202	P8146Z202	BANDSAW BLADE 3/8"W STANDARD
203	P8146Z203	WHEEL LOWER
204	PB170M	HEX BOLT M10-1.5 X 10
205	P8146Z205	COLLAR
206	PSS20M	SET SCREW M8-1.25 X 8
207	P6206	BALL BEARING 6206ZZ
208	PK107M	KEY 8 X 8 X 20
209	P8146Z209	LOWER WHEEL SHAFT
210	P8146Z210	SPECIAL SCREW 3/4-16
211	PB73M	HEX BOLT M10-1.5 X 50

REF	PART #	DESCRIPTION
212	P8146Z212	BEARING HOUSING
213	PB25M	HEX BOLT M12-1.75 X 25
214	P8146Z214	WHEEL PULLEY
215	PVA66	V-BELT A-66 4L660
216	PSS16M	SET SCREW M8-1.25 X 10
217	P8146Z217	MOTOR PULLEY
218	P8146Z218	MOTOR 2HP 220V 3PH
218-1	P8146Z218-1	MOTOR FAN COVER
218-2	P8146Z218-2	MOTOR FAN
218-3	P8146Z218-3	MOTOR WIRING JUNCTION BOX

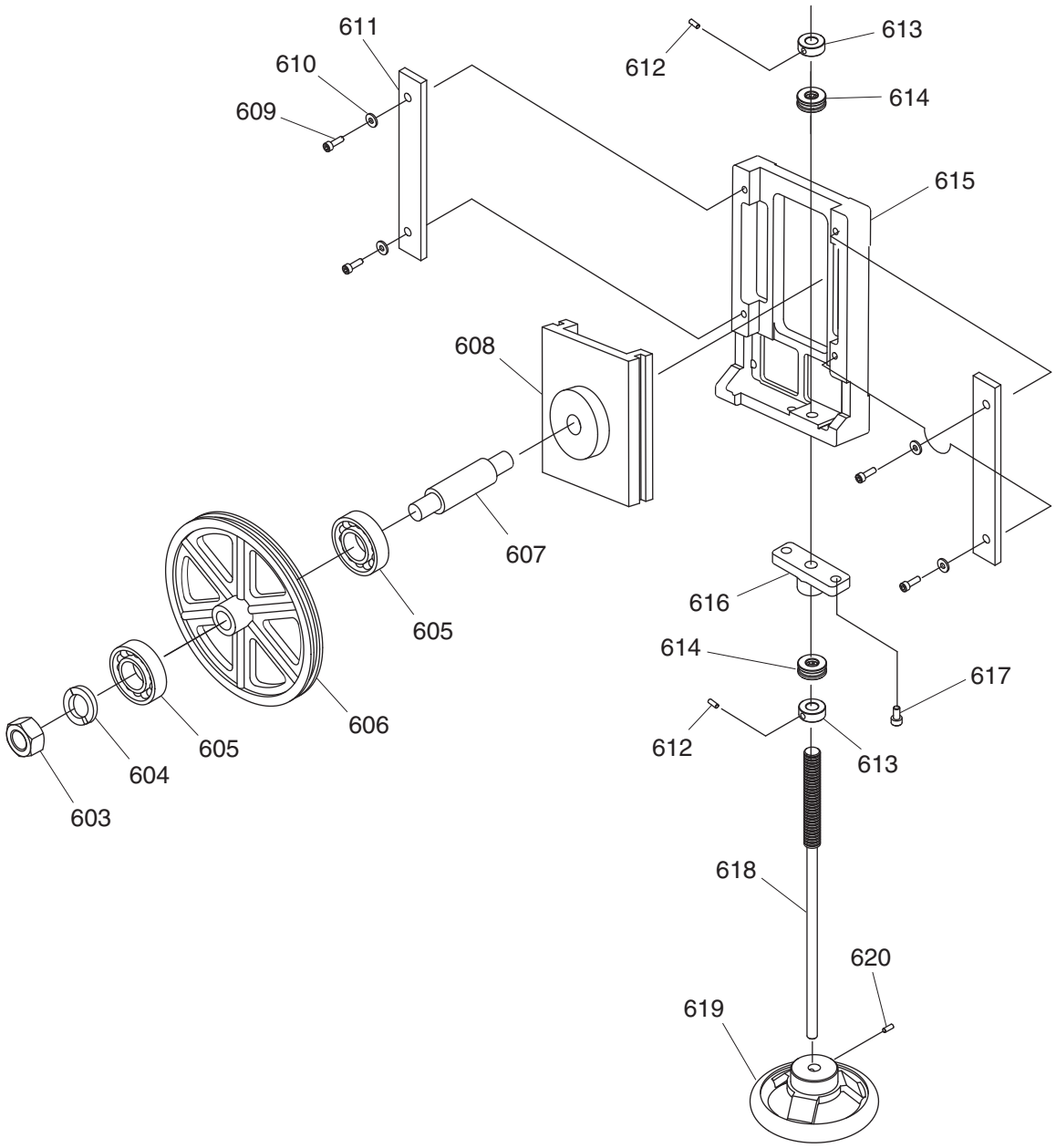
G8146Z Guide Post Breakdown & Parts List



REF	PART #	DESCRIPTION
501	PSB02M	CAP SCREW M6-1 X 20
502	PW03M	FLAT WASHER 6MM
503	P8144Z503	BLADE GUIDE
504	P8144Z504	BLADE GUIDE BRACKET UPPER
505	P8144Z505	BLADE SUPPORT
506	PSB02M	CAP SCREW M6-1 X 20
507	PRP102M	ROLL PIN 4 X 36
508	P8146Z508	GUIDE POST CLAMP PLATE
509	P8146Z509	GUIDE POST RACK
510	P8146Z510	GUIDE POST BRACKET
511	P8146Z511	SPECIAL FLAT WASHER 13 X 35 X T2
512	P8146Z512	LOCK KNOB 7/16-14 X 7/8
513	P8146Z513	SPECIAL SCREW 1/2-14 X 9/16

REF	PART #	DESCRIPTION
514	P8146Z514	GUIDE POST PINION GEAR 15T OD 3
515	P8146Z515	WORM GEAR P6.2832 OD 27MM
516	P8146Z516	COLLAR
517	P8146Z517	HANDWHEEL HANDLE
518	P8146Z518	HANDWHEEL
519	PSS02M	SET SCREW M6-1 X 6
520	P8146Z520	BRACKET
521	PLW03M	LOCK WASHER 6MM
522	PSB02M	CAP SCREW M6-1 X 20
523	P8146Z523	BLADE GUARD
524	PW04M	FLAT WASHER 10MM
525	PSB146M	CAP SCREW M10-1.5 X 15

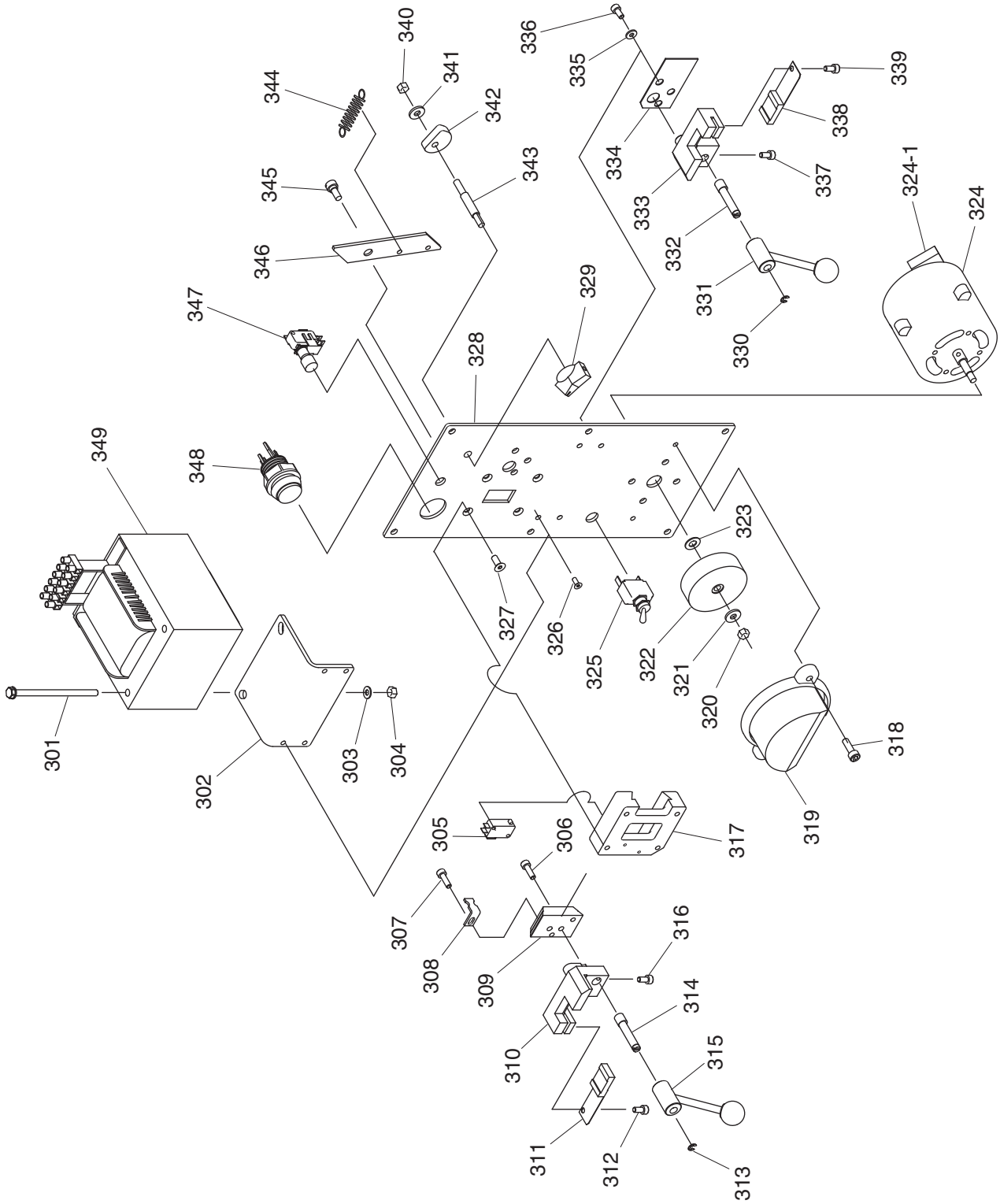
G8146Z Upper Wheel Breakdown & Parts List



REF	PART #	DESCRIPTION
603	PN09	HEX NUT 5/8-18
604	PLW06	LOCK WASHER 5/8
605	P6304	BALL BEARING 6304ZZ
606	P8146Z606	WHEEL UPPER
607	P8146Z607	UPPER WHEEL SHAFT
608	P8146Z608	SLIDING BLOCK
609	PB07M	HEX BOLT M8-1.25 X 25
610	PLW04M	LOCK WASHER 8MM
611	P8146Z611	LOCK PLATE

REF	PART #	DESCRIPTION
612	PSS02M	SET SCREW M6-1 X 6
613	P8146Z613	COLLAR
614	P2901	THRUST BEARING 2901
615	P8146Z615	TENSIONING WAY
616	P8146Z616	LEADSCREW BRACKET
617	PSB31M	CAP SCREW M8-1.25 X 25
618	P8146Z618	LEADSCREW 5/8-18 X 11-13/16
619	P8146Z619	HANDWHEEL
620	PSS16M	SET SCREW M8-1.25 X 10

Welder Station Breakdown

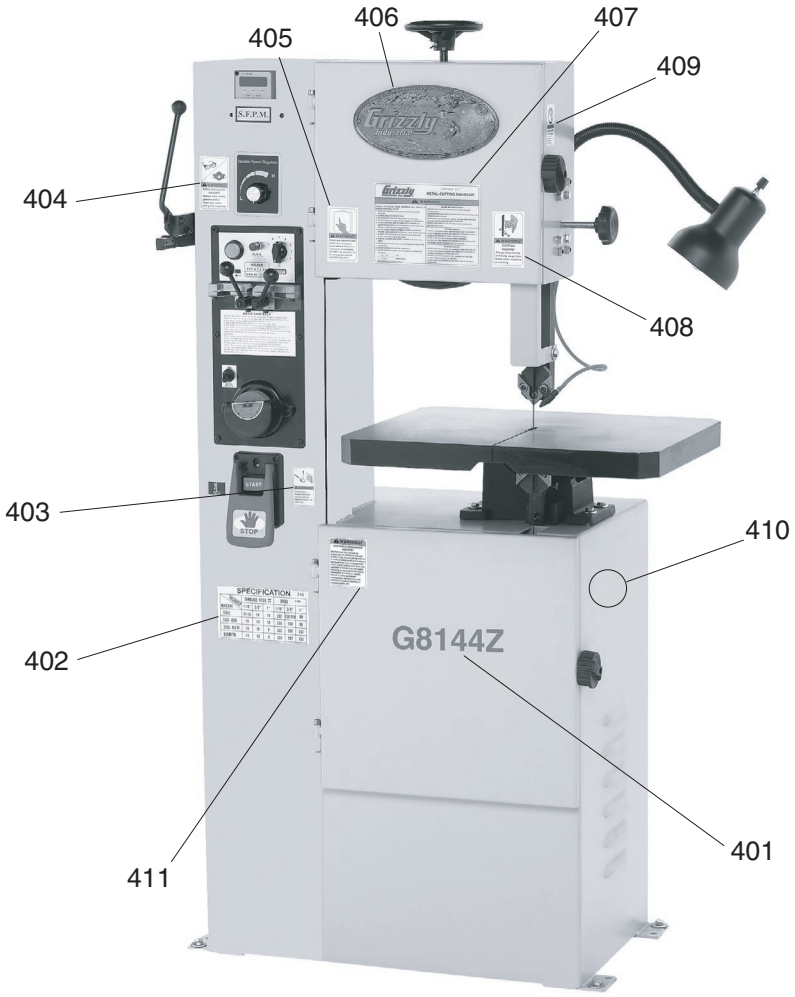


Welder Station Parts List

REF	PART #	DESCRIPTION
301	PB96	HEX BOLT 1/4-20 X 4
302	P8144Z302	TRANSFORMER BRACKET
303	PW06	FLAT WASHER 1/4
304	PN05	HEX NUT 1/4-20
305	P8144Z305	LIMIT SWITCH
306	PSB06M	CAP SCREW M6-1 X 25
307	PSB04M	CAP SCREW M6-1 X 10
308	P8144Z308	LIMIT SWITCH BRACKET
309	P8144Z309	SLIDING BLOCK
310	P8144Z310	WELDING CLAMP LEFT
311	P8144Z311	WELDING JAW LEFT
312	PSB26M	CAP SCREW M6-1 X 12
313	PEC02M	E-CLIP 4MM
314	P8144Z314	SHAFT
315	P8144Z315	CLAMP LEVER
316	PSB26M	CAP SCREW M6-1 X 12
317	P8144Z317	SLIDING BLOCK BASE
318	PS11M	PHLP HD SCR M6-1 X 16
319	P8144Z319	GRINDER COVER
320	PN01M	HEX NUT M6-1
321	PW03M	FLAT WASHER 6MM
322	P8144Z322	GRINDING WHEEL 2-1/2"D
323	PW03M	FLAT WASHER 6MM
324	P8144Z324	GRINDER MOTOR 1/8HP 220V 1PH
324-1	P8144Z324-1	S CAPACITOR 3M 250V 3/4 X 1-1/4
325	P8144Z325	ON/OFF SWITCH

REF	PART #	DESCRIPTION
326	PS11M	PHLP HD SCR M6-1 X 16
327	PS26M	PHLP HD SCR M6-1 X 20
328	P8144Z328	WELDING PANEL
329	P8144Z329	CLAMP PRESSURE KNOB
330	PEC02M	E-CLIP 4MM
331	P8144Z331	CLAMP LEVER
332	P8144Z332	SHAFT
333	P8144Z333	WELDING CLAMP RIGHT
334	P8144Z334	INSULATING PLATE
335	PW03M	FLAT WASHER 6MM
336	PSB02M	CAP SCREW M6-1 X 20
337	PSB02M	CAP SCREW M6-1 X 20
338	P8144Z338	WELDING JAW RIGHT
339	PSB02M	CAP SCREW M6-1 X 20
340	PN01M	HEX NUT M6-1
341	PW03M	FLAT WASHER 6MM
342	P8144Z342	PRESSURE CAM
343	P8144Z343	CAM SHAFT
344	P8144Z344	TENSION SPRING 0.8 X 25MM
345	PS04	PHLP HD SCR 1/4-20 X 1/2
346	P8144Z346	BRACKET
347	P8144Z347	ANNEALING PUSH BUTTON
348	P8144Z348	WELDING PUSH BUTTON
349	P8144Z349	TRANSFORMER 1.2KVA 220V (G8144Z)
349	P8145Z349	TRANSFORMER 2KVA 220V (G8145Z)
349	P8146Z349	TRANSFORMER 4.2KVA 220V (G8146Z)

Label Placement & List



REF	PART #	DESCRIPTION
401	P8144Z401	MODEL # LABEL (G8144Z)
401	P8145Z401	MODEL # LABEL (G8145Z)
401	P8146Z401	MODEL # LABEL (G8146Z)
402	P8144Z402	BLADE SPECIFICATION LABEL
403	P8144Z403	POWER DISCONNECT LABEL VERT S
404	P8144Z404	EYE/LUNG HAZARD LABEL VERT L
405	P8144Z405	READ MANUAL LABEL VERT L
406	G8588	GRIZZLY NAMEPLATE 9-1/2" X 4-1/2"

REF	PART #	DESCRIPTION
407	P8144Z407	MACHINE ID LABEL (G8144Z)
407	P8145Z407	MACHINE ID LABEL (G8145Z)
407	P8146Z407	MACHINE ID LABEL (G8146Z)
408	P8144Z408	BLADE HAZARD LABEL VERT L
409	P8144Z409	DOOR INJURY HAZARD LABEL VERT S
410	PPAINT-11	GRIZZLY PUTTY TOUCH UP PAINT
411	P8144Z411	UNSTABLE WORKPIECE LABEL

⚠WARNING

Safety labels warn about machine hazards and ways to prevent injury. The owner of this machine MUST maintain the original location and readability of the labels on the machine. If any label is removed or becomes unreadable, REPLACE that label before using the machine again. Contact Grizzly at (800) 523-4777 or www.grizzly.com to order new labels.

Grizzly Industrial, Inc. WARRANTY CARD

Name _____

Street _____

City _____ State _____ Zip _____

Phone # _____ Email _____ Invoice # _____

Model # _____ Order # _____ Serial # _____

The following information is given on a voluntary basis. It will be used for marketing purposes to help us develop better products and services. ***Of course, all information is strictly confidential.***

1. How did you learn about us?

____ Advertisement ____ Friend ____ Catalog
____ Card Deck ____ Website ____ Other:

2. Which of the following magazines do you subscribe to?

____ Cabinet Maker
____ Family Handyman
____ Hand Loader
____ Handy
____ Home Shop Machinist
____ Journal of Light Cont.
____ Live Steam
____ Model Airplane News
____ Modeltec
____ Old House Journal
____ Popular Mechanics
____ Popular Science
____ Popular Woodworking
____ Practical Homeowner
____ Precision Shooter
____ Projects in Metal
____ RC Modeler
____ Rifle
____ Shop Notes
____ Shotgun News
____ Today's Homeowner
____ Wood
____ Wooden Boat
____ Woodshop News
____ Woodsmith
____ Woodwork
____ Woodworker West
____ Woodworker's Journal
____ Other:

3. What is your annual household income?

____ $20,000-$29,000 ____ $30,000-$39,000 ____ $40,000-$49,000
____ $50,000-$59,000 ____ $60,000-$69,000 ____ $70,000+

4. What is your age group?

____ 20-29 ____ 30-39 ____ 40-49
____ 50-59 ____ 60-69 ____ 70+

5. How long have you been a woodworker/metalworker?

____ 0-2 Years ____ 2-8 Years ____ 8-20 Years ____ 20+ Years

6. How many of your machines or tools are Grizzly?

____ 0-2 ____ 3-5 ____ 6-9 ____ 10+

7. Do you think your machine represents a good value? _____ Yes _____ No

8. Would you recommend Grizzly Industrial to a friend? _____ Yes _____ No

9. Would you allow us to use your name as a reference for Grizzly customers in your area?
Note: *We never use names more than 3 times.* _____ Yes _____ No

10. Comments: _____

_____

_____

_____

CUT ALONG DOTTED LINE

FOLD ALONG DOTTED LINE

Place
Stamp
Here

GRIZZLY INDUSTRIAL, INC.
P.O. BOX 2069
BELLINGHAM, WA 98227-2069

FOLD ALONG DOTTED LINE

Send a Grizzly Catalog to a friend:

Name_____

Street_____

City_____State_____Zip_____

TAPE ALONG EDGES--PLEASE DO NOT STAPLE

WARRANTY AND RETURNS

Grizzly Industrial, Inc. warrants every product it sells for a period of **1 year** to the original purchaser from the date of purchase. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence, accidents, repairs or alterations or lack of maintenance. This is Grizzly's sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant or represent that the merchandise complies with the provisions of any law or acts unless the manufacturer so warrants. In no event shall Grizzly's liability under this warranty exceed the purchase price paid for the product and any legal actions brought against Grizzly shall be tried in the State of Washington, County of Whatcom.

We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special, or consequential damages arising from the use of our products.

To take advantage of this warranty, contact us by mail or phone and give us all the details. We will then issue you a "Return Number," which must be clearly posted on the outside as well as the inside of the carton. We will not accept any item back without this number. Proof of purchase must accompany the merchandise.

The manufacturers reserve the right to change specifications at any time because they constantly strive to achieve better quality equipment. We make every effort to ensure that our products meet high quality and durability standards and we hope you never need to use this warranty.

Please feel free to write or call us if you have any questions about the machine or the manual.

Thank you again for your business and continued support. We hope to serve you again soon.